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PART FIRST.

ORIGINAL COMMUNICATIONS.

ART. 1.—*Systematic Quantitative Analysis of Urine.* By THEO. G. WORMLEY, M. D., Columbus, Ohio.

Every day's experience teaches us that the *urine*, in its Physiological and Pathological relations, may be looked upon as the best index of the manner in which various organs of the body are performing their functions. Unfortunately, the complex character of that fluid in regard to its chemical constitution, and the difficulties attending the methods of analysis, have heretofore prevented any but the scientific chemist from attempting its systematic investigation. Perhaps, however, no department of chemistry has made more progress in the last few years, than that of zoo-chemistry; within that time we have had methods given us for estimating many substances which formerly could not be estimated at all; or, only in a very imperfect manner. For example, it was not until recently that we had any reliable method of estimating the urea, which is one of the most important constituents of the urine. The methods formerly given of estimating it as oxalate, nitrate, and in many other forms, were, on account of the solubility of urea and its salts, both tedious and imperfect. The recent method by LIEBIG, however, is simple and accurate.

In the present article, we will take advantage of the more recent methods of analysis, and so give them in detail, as to render them perfectly plain and practicable. At the same time, we will give the

method which we have followed for separating the various constituents, and the manner of distributing them according to their combining affinities. This will cause us to enter into many minute details, which, although well known to the skillful chemist, may be of use to those whose opportunities in this respect have been limited.

First, the *apparatus* necessary to pursue the analysis as we propose, will be as follows: a specific gravity bottle, a few Berlin evaporating dishes, a few beaker glasses, a small platinum crucible, a graduated tube, a balance, and a few small funnels; also, a small quantity of filtering and litmus paper.

The *reagents*,* are caustic and nitrate of baryta, chloride of barium, nitrate of silver, nitrate of mercury, oxalic acid, bichloride of platinum, and chloride of iron; also, carbonate and caustic ammonia.

In making an analysis of the urine, the discharge of an entire day should be received into a clean vessel, and the amount noted, as also its reaction upon litmus paper. The specific gravity should be then taken at a temperature of 60° F. This is most conveniently done by means of a specific gravity bottle having a perforated stopper. It is scarcely necessary to add that the urine should be well agitated before taking its specific gravity. We may now proceed with the analysis.

Determination of the urea. ($C_2H_4O_2N_2$.) The urea is best determined by the process introduced by Liebig, that is, by precipitating it with the nitrate of mercury. Before we can apply this reagent, however, the phosphoric and sulphuric acids must be separated from the urine. This is best done by treating a certain amount, say 100 grains, with half its volume of a fluid containing, in every three volumes, two of a saturated solution of caustic baryta, (BaO, HO,) and one of the nitrate of baryta, (BaO, NO_5.) This will precipitate the phosphoric and sulphuric acids as phosphate and sulphate of baryta, and these salts are to be separated by filtration. To the filtered fluid we add, from a graduated tube, a solution of nitrate of mercury, of known strength, as long as it produces a precipitate. (The urine should be well agitated during the adding of the nitrate of mercury.) This precipitate will be white in color, and consists of one equivalent of urea in combination with four of the protoxide of mercury. ($C_2H_4N_2O_2$, 4HgO.) When we suppose that enough of the nitrate has been added, we pour

* The most reliable apparatus and reagents may be obtained of Luhme, of Berlin, who has established an agency at 343 Broadway, New York.

the fluid upon a filter, and to the filtrate, we may again add a few drops of the nitrate. If this produces a precipitate, we may add still more of the nitrate, and filter again, and so proceed until the filtrate no longer yields a precipitate.

If an excess of the mercury solution has been added, it may readily be determined by removing a drop of the filtered fluid upon a watch glass, and adding a drop of a solution of carbonate of soda. If this produces a yellow precipitate, it indicates an excess of mercury; on the contrary, if the precipitate is white, the mercury solution has not been sufficient.

From the amount of oxide of mercury required to precipitate the urea, we can easily estimate the amount of urea present; for, as every equivalent of urea requires four of the oxide, we have the proportion, 432 (equiv. wt. of 4 HgO): 60 (equiv. wt. of urea):: *a* (the am't of HgO required) : *x* (the am't of urea it will precipitate.) As it requires 7.2 grains of oxide of mercury to precipitate one of urea, we may readily estimate the urea by dividing the oxide of mercury required by 7.2.

A tube capable of containing one cubic inch of fluid and graduated to hundredths, answers very well for containing the mercury solution; however, it is not of much importance as to the amount it will contain. It is only necessary that it be graduated, so that by knowing the value of an entire measure, we may be enabled to estimate what part of a measure has been required.

The value of the mercury solution may be obtained in several ways. We may obtain it directly of a known value by dissolving red oxide of mercury (HgO) in dilute nitric acid. Say 100 grains of the oxide is taken, and we add to this just sufficient dilute nitric acid to dissolve it; we then add to this solution sufficient water to make it equal to five cubic inches; obviously, each cubic inch of this solution will contain twenty grains of the oxide of mercury.

We have found by repeated experiments, that the value of a solution of nitrate of mercury may be very easily, and with considerable accuracy, obtained by passing into a known volume of the solution, contained in a counterpoised test tube, a stream of sulphurous acid gas (SO_2) to complete saturation, and then heating the mixture. The metallic mercury will now be precipitated. The greater portion of the fluid can now be removed by means of a *pipette*, and the tube and its contents transferred to a water bath, and dried at a temperature of 130° F. It can now be weighed, and the

increase of weight will indicate the amount of mercury in the volume of solution acted upon. From this we can estimate the amount of oxide it would form, by this proportion; 100 (equiv. wt. Hg): 108 (equiv. wt. HgO) :: *a* (the amount of Hg obtained) : *x* (the amount of oxide it would form.)

Liebig has given a method which is very easy of execution, depending upon the fact, that if to a solution of nitrate of mercury we add phosphate of soda, the oxide of mercury is precipitated as phosphate, and this precipitate is re-dissolved by a solution of chloride of sodium. If, therefore, we precipitate the oxide of mercury from its nitric acid solution by phosphate of soda, and add to the precipitate a solution of chloride of sodium of known strength, to dissolve the precipitate, we can easily estimate the amount of oxide of mercury present; for every equivalent of the chloride of sodium will represent one of the oxide. From this, we have the proportion; 59 (the equiv. wt. of NaCl.) : 108 (the equiv. wt. of HgO) :: *a* : *x* (the am't of HgO present.)

The solution of chloride of sodium is easily obtained of a known strength, when we remember that a saturated solution at the temperature of 60° F. always contains 27 per cent. of the salt. Unfortunately, it is somewhat difficult to procure perfectly pure chloride of sodium.

Lastly, we may ascertain the value of the mercury solution by precipitating a known volume by means of a solution of pure urea of known value.

In order to make this subject more easily understood, we propose to exemplify it by introducing, at each step, the results of an actual investigation.

In this case, 100 grains of prepared urine required .75 of a measure of a solution of nitrate of mercury, containing 19.872 grains to the measure, to precipitate the urea. This .75 of a measure contained 14.904 grains of oxide of mercury. Therefore, we have this proportion: 432 : 60 :: 14.904 : 2.07 (the am't of urea in 100 grains,) which would give 20.7 grains to the 1000 grains of urine.

Determination of the uric acid. ($C_{10}O_4H_6N_4$.) The uric acid may be estimated by evaporating 2000 grains of the urine to about one-half its bulk, then adding to this about half a drachm of hydrochloric acid and allowing it to stand 36 or 48 hours, when the uric acid will be deposited in crystals upon the sides and bottom of the dish. The fluid can now be decanted, and the crystals washed with

a little alcohol, and then transferred to a weighed filter and again washed with more alcohol. They may now be dried in a water bath and weighed. The weight divided by 2 will give the amount in a thousand grains. Our example gave .97 of a grain in the 1000 grains of urine.

Determination of the mucus. The mucus may easily be determined by passing a known amount of the urine through a weighed filter, by which it will be retained. The filter is now washed with water, acidulated with hydrochloric acid, dried upon a water bath, and weighed. The increase in weight will represent the weight of the mucus. Our case gave .12 of a grain.

We have now obtained the *organic* matter of healthy urine, with the exception of those substances usually denominated extractives, and which are obtained by an indirect method.

Determination of the water and solids. Place in a counterpoised Berlin evaporating dish 1000 grains of urine. Evaporate this in a water bath at about 180° F. until it ceases to lose in weight, (weighing at intervals of about half an hour.) When the dish ceases to lose in weight, its weight may be accurately noted. The loss in weight will indicate the *water*, and the residue the amount of *solid matter* in 1000 grains of urine. Our example gave, *water*, 947.5 grains, *solids*, 52.5 grains.

A very convenient water bath that we have used for this purpose is a tin vessel holding about a quart of water, upon which the evaporating dish containing the urine is to be floated, at the same time immersing in the water a thermometer. By now placing under the vessel a strong flame of a spirit lamp, we can quickly raise it to the desired temperature: now replacing this lamp by one with a feeble flame, we can maintain a very uniform temperature for several hours. It requires about seven hours to evaporate 1000 grains of urine at 180° F.

Determination of the fixed salts. The evaporating dish containing the solid constituents of the 1000 grains is now to be strongly heated for the purpose of carbonizing the mass. It is best to thus destroy as much of the organic matter as possible. If this precaution is not taken, but the solids transferred directly to a platinum crucible, as is generally recommended, it will very much injure, if not entirely destroy the crucible. After the solids have been well carbonized, they may be carefully removed from the evaporating dish to a counterpoised platinum crucible, there to be kept at a red heat until the

carbonaceous matter is entirely driven off; that is, until the mass becomes perfectly white. The increased weight of the crucible will give the gross weight of the fixed earthy and alkaline salts. The case before us gave 19.30 grains.

Determination of the earthy and alkaline salts. The fixed salts are now to be digested with two or three ounces of hot distilled water, then thrown upon a filter and washed with a little more hot water, and this process continued as long as anything is dissolved. These washings are to be collected with the previously filtered fluid and retained for further examination. We will now have upon the filter the earthy salts, consisting of the phosphates of lime and magnesia, and the silica. The filter is now to be transferred with its contents to a counterpoised platinum crucible and powerfully heated, and the increase of weight noted. This increase will indicate the gross weight of these salts. Our case gave 2.15 grains. This, taken from the gross weight of the fixed salts, will give the gross weight of the fixed alkaline salts. Thus 19.30– 2.15=17.15, *the alkaline salts.*

The earthy salts may now be treated with dilute nitric acid, which will dissolve the phosphates and leave the silica as a gritty mass consisting of shining crystals. These are to be carefully washed upon a counterpoised watch glass, and then dried and weighed. The increase in weight will give the *silica.* Our case gave .03 of a grain. The nitric acid solution of the phosphates may now be rejected.

Determination of the Chlorine in the alkaline salts. The aqueous solution of the fixed alkaline salts, obtained above, is now to be acidified with nitric acid, for the purpose of preventing the precipitation of the phosphoric acid; and then a solution of nitrate of silver is added as long as it produces a precipitate. The chlorine will now be thrown down as chloride of silver (AgCl.) The fluid is now boiled for a few minutes, and then thrown upon a counterpoised filter, which is then dried and weighed. Or perhaps it is better to transfer the chloride to a porcelain crucible, and heat it to incipient fusion, and then weigh. In case the chloride of silver adheres to the crucible it may easily be detached by digesting in it zinc and dilute sulphuric acid. From the weight of the chloride of silver obtained, the amount of *chlorine* can be calculated as follows: 144 (the equiv. wt. of AgCl.):36 (the equiv. wt. of Cl.):: $a:z$. Thus in the examination we made, the proposition is as follows:

144: 36:: 30.52: 7.63 (Chlorine.) The solution of alkaline salts need not be retained.

The sulphuric acid might be obtained from the above acid solution of the fixed alkaline salts, by precipitating the excess of nitrate of silver by chloride of sodium or chloride of ammonium. If chloride of sodium be used, it should previously be examined for sulphate of soda, as that is a very frequent impurity. After filtering we can precipitate the sulphuric acid by means of chloride of barium, which will throw it down as sulphate of baryta. From this we can estimate the sulphuric acid as follows: 117: 40:: $a : x$. It is best, however, to estimate the sulphuric acid from a fresh portion of urine, as the sulphates, when incinerated with much organic matter, are liable to be reduced to sulphurets. In several cases which we have examined, the fixed salts after incineration, evolved sulphuretted hydrogen when treated with dilute sulphuric acid, which evolution indicated the presence of a sulphuret.

Or the potassium might be estimated from the above solution of the fixed alkaline salts by neutralizing it with ammonia, and precipitating the phosphoric and sulphuric acids, and the excess of nitrate of silver by chloride of barium. The reaction would be as follows: $2NaO:HO,PO_5+KO.SO_3+AgO.NO_5+4BaCl=2NaCl+KCl+AgCl+2BaO:HO.PO_5+BaO.SO_3+BaO.No_5$.

After filtration the excess of barium should be removed by adding a solution of carbonate of ammonia. Thus, $BaO.NO_5+BaCl+2NH_4O.CO_2=2BaO.CO_2+NH_4O.NO_5+NH_4Cl$. We again filter, evaporate to dryness, and heat to redness; we thus volatilize the ammonia salts and have left a residue of the chlorides of potassium and sodium. By dissolving these in water we can then precipitate the chloride of potassium by the bi-chloride of platinum. It is best, however, to obtain the potassium from 100 grains of urine.

Determination of the chloride of ammonium Take 100 grains of filtered urine and acidify with nitric acid, then add a solution of nitrate of silver as long as it produces a precipitate; and proceed as in estimating the chlorine of the fixed alkaline salts. The excess of the chlorine thus obtained over that of the fixed alkaline salts is to be given to ammonium; as the chloride of that base volatilizes during the ignition of the alkaline salts. Thus in the case before us, 100 grains of fresh urine yielded 3.47 grains of chloride of silver, which would give, for 1000 grains of urine, 34.70 grains, being an excess of 4.18 grains over the chloride furnished by the fixed alkaline salts;

for, 34.70 – 30.52= 4.18. This would represent 1.045 grains of chlorine; for, 144: 36:: 4.18: 1.045. This would form 1.567 grains of chloride of ammonium; for, 36: 54:: 1.045: 1.567.

Determination of the phosphoric acid. *Lehmann* has given a very easy method of determining the phosphoric acid. A solution of sesquichloride of iron of determined strength is added to a known amount of urine, acidified with acetic acid, so long as the phosphate of the sequioxide of iron (Fe_2O_3,PO_5) is precipitated. From the amount of iron solution thus used, the amount of phosphoric acid is calculated.

The method we have followed in preparing this test solution of iron is as follows: Dissolve ten grains of pure iron in *aqua regia.* Evaporate to dryness in a water bath. This is for the purpose of getting rid of the excess of acid without decomposing the chloride of iron. The residue is now dissolved in a few ounces of water. If it does not all dissolve it indicates that part of the chloride was decomposed during evaporation. This may be dissolved by adding a few drops of hydrochloric acid. Enough water is now added to make the solution measure ten cubic inches. Obviously, each cubic inch of the solution will contain one grain of iron. As it requires two equivalents of iron to precipitate one of phosphoric acid, we make the first term of our proportion 56, which is the combining weight of two equivalents of iron, and the second 72, which is the equivalent weight of phosphoric acid.

The analysis before us required, of a solution prepared as above, 1.25 measures to precipitate the phosphoric acid in 1000 grains of urine. This would indicate 1.25 grains of iron. We now have the proportion, 56: 72:: 1.25: 1.607. Therefore the 1000 grains contained 1.607 grains of phosphoric acid.

In order to ascertain if an excess of the iron solution has been added, a strip of paper, saturated with a solution of ferrocyanide of potassium, is moistened with a drop of filtered urine; if there is a trace of excess, it will be indicated by the formation of Prussian Blue.

Determination of the Lime. The urine from which we obtained the phosphoric acid is now neutralized with ammonia, free from carbonate, a slight excess being added. This will precipitate the excess of sesqui-chloride of iron, if any has been added, as sesquioxide. The urine is now filtered and the filter well washed. In precipitating the phosphoric acid by the chloride of iron, the bases with which it was combined were changed into chlorides, thus:

$2\,CaO{:}HO.PO_5 + Fe_2Cl_3 = Fe_2O_3,PO_5 + HCl + 2\,CaCl$. We have, therefore, the calcium in the form of chloride, in an alkaline solution. We now add from a graduated tube a solution of oxalic acid, ($C_2O_3.HO$) of known strength, as long as it produces a precipitate. From the amount required, we calculate the lime as follows: 45 (the atomic wt. of $C_2O_3.HO$) :28 (atomic wt. of CaO) :: $a : x$. Or 45: 28:: 1: .622, which was the amount required for the specimen before us.

The oxalic acid is prepared as has been already recommended in a former number of this Journal. (Vol. vi. No. vi.)

Determination of the Sulphuric acid. The above urine is again filtered and slightly acidified with nitric acid, and a solution of chloride of barium is added as long as it produces a precipitate. This will throw down the sulphuric acid as sulphate of baryta. This is thrown upon a filter, washed, dried, and carefully removed from the filter to a platinum crucible, ignited and weighed. From the sulphate thus obtained, the sulphuric acid is calculated. The atomic weight of sulphate of baryta is 117, that of sulphuric acid is 40. The analysis from which we have been quoting gave 4.70 grains of the sulphate. Therefore, 117: 40:: 4.70: 1.606.

It is always recommended in estimating sulphuric acid to ignite the sulphate of baryta *with* the filter, but this will give erroneous results. The carbon of the filter reduces the sulphate to a sulphuret, ($BaO, SO_3 + 4C = 4CO + BaS$) the atomic weight of which is 85, while that of the sulphate is 117, a difference which would effect our calculations very seriously. We have made repeated experiments upon this point, and *in every instance*, upon the addition of dilute nitric acid to the incinerated mass, there was an evolution of sulphuretted hydrogen, thereby showing that a reduction had taken place. Sometimes this reduction was but partial, and in other cases it was nearly total. To give but one example: Five grains of well dried sulphate of baryta were moistened with water and carefully spread upon a filter of moderate size, and ignited. After incineration it weighed but 3.87 grains, showing that nearly all the sulphate had been reduced.

As this reduction of the sulphate of baryta takes place from the presence of the carbonaceous matter of the filter, it is not improbable that a similar reduction takes place during the incineration of the solid residue of the urine (which contains a large amount of carbonaceous matter,) for the purpose of estimating the fixed inorganic salts.

In this case, however, there is present a large amount of nitrogen, which will combine with the hydrogen present, to form ammonia; this will eliminate oxygen, which will in a great measure supply the carbon. This reduction, however, does sometimes take place. We have treated the incinerated residue of several portions of urine with dilute sulphuric acid, and in two instances had sulphuretted hydrogen evolved, showing that a sulphuret was present.

According to the method of analysis proposed, if a reduction took place it would be discovered in summing up the result of the process. It would be found that we had not sufficient base to supply the chlorine; if so, we should assume sufficient sodium for that purpose; we should thus meet any reduction that might have taken place.

If, on the other hand, we had estimated the sulphuric acid from the incinerated inorganic salts, and a reduction had taken place, our estimate of that acid and its salts would be too low, and we should not have sufficient chlorine to form chloride of sodium enough to make the alkaline salts correspond, by calculation, to the gross weight of those salts as obtained by incineration. For this reason we think it better to estimate the sulphuric acid as recommended above.

Determination of the Potassium. Take 100 grains of urine, supersaturate with caustic ammonia, which will precipitate the earthy phosphates, and then add chloride of barium as long as it produces a precipitate. By this process we precipitate the sulphuric and phosphoric acids from their combination with the alkaline bases. At the same time it will change these bases into chlorides, thus: $2\,NaO{:}HO.PO_5 + KO.SO_3 + 3\,BaCl = 2\,BaO{:}HO.PO_5 + BaO.SO_3 + 2\,NaCl + KCl$. The first two salts are insoluble, the chlorides are soluble and may be separated by filtration. The filtered fluid, however, will contain the excess of chloride of barium added. This may be removed by digesting it with carbonate of ammonia and a little free ammonia. We thus change the chloride of barium into carbonate of baryta, and at the same time form the chloride of ammonia, thus: $BaCl + NH_4O, CO_2 = BaO.CO_2 + NH_4Cl$. The first of these salts is to be removed by filtration. The filtered fluid is then evaporated to dryness, and incinerated, for the purpose of volatilizing the ammoniacal salt. The residue, consisting of the chlorides of sodium and potassium may now be weighed. It is then dissolved in a small quantity of water and a solution of bi-chloride of platinum ($Pt\,Cl_2$) added as long as any precipitate is produced. The mixture is now evaporated upon a water bath to dryness, or nearly so. We now treat the dry resi-

due with a small portion of alcohol containing a little ether. This will dissolve the chloride of sodium together with the excess of bichloride of platinum added. By throwing the mixture upon a weighed filter these can be separated. The filter, with its contents, consisting of the double chlorides of potassium and platinum ($KCl, PtCl_2$) dried upon a water bath at a temperature of 212° and weighed. Its increase in weight will indicate the amount of double salt obtained from 100 grains of urine, and this multiplied by 10 will give the amount to be obtained from 1000 grains.

From the amount of double salt obtained, we calculate the amount of chloride of potassium that it contains. The atomic weight of the double salt is 245, that of the chloride of potassium is 75, therefore, 245: 75:: $a : x$. To illustrate with our example:—100 grains of urine furnished 1.885 grains of the double chloride of potassium and platinum. This would indicate 18.85 grains in 1000 grains of urine. Therefore, 245: 75:: 18.85: 5.770, (the amount of chloride of potassium present in 1000 grains of urine.)

The amount of chloride of potassium thus obtained may be taken from the gross weight of the chlorides of sodium and potassium, and the difference will represent the chloride of sodium. This may be used as a confirmatory test; the weighing, however, is not essential, as we obtain the chloride of sodium in another manner.

Distribution of inorganic substances. By now summing up the facts which have been obtained concerning several of the bases and acids of the inorganic salts, we can make out the manner in which they were combined, together with the amount of salts they would produce. We can also calculate the amount of those bases and acids which have not been directly estimated.

First. We have the gross weight of the *earthy salts.* Of the special constituents of these, we have estimated the *lime* and *silica.* We have also estimated the gross weight of the *phosphoric acid* contained in the alkaline and earthy salts. Having these four facts, we can, by simple calculation, determine the individual quantities of the earthy salts. We first determine how much phosphoric acid the lime present will require, and by adding these together, it will give us the *phosphate of lime.* By now adding the weight of the *silica* to the weight of the phosphate of lime, and deducting this from the gross weight of the earthy salts, we obtain the amount of *phosphate* of *magnesia.* From the weight of the phosphate of magnesia we can calculate the amount of phosphoric acid necessary to form that

salt. By adding this to the weight of the phosphoric acid in combination with the lime, and deducting it from the gross weight of the phosphoric acid obtained from all the inorganic salts, we can estimate the quantity in combination with the alkaline bases.

In estimating the phosphates, it must be remembered that they existed in the urine in the tribasic form, and, as by incineration, they were reduced to the bibasic form, we must, in our calculations, make an allowance for this reduction.

Secondly. Of the fixed *alkaline salts;* we have the amount of the *phosphoric* and *sulphuric* acids; also, the amount of *chlorine* and *chloride of potassium* that the *potassium* present would form. Having these four facts we can estimate the individual quantities of the fixed alkaline salts.

In distributing these, we first ascertain how much soda the phosphoric acid would neutralize; these added will represent the amount of bibasic phosphate of soda, ($2\,NaO:PO_5$). It must be remembered, however, that it existed in the urine as the tribasic phosphate, ($2\,NaO:HO.PO_5$).

We may now ascertain how much potash the sulphuric acid obtained would neutralize, and then ascertain how much chloride of potassium would be required to furnish this amount of potash; we then take this amount of chloride from the entire amount of chloride of potassium obtained from the urine, and leave the remainder as *chloride of potassium.* By now adding the potash required, and the sulphuric acid requiring it, together, we shall have the amount of *sulphate of potash.*

If the chloride of potassium furnished by the entire amount of urine will not furnish sufficient potash for all the sulphuric acid, we shall have to ascertain how much sulphuric acid would be required to neutralize the potash represented by the chloride of potassium, and give it that amount. The excess of sulphuric acid should then be given to soda, as sulphate of soda.

If, on the other hand, the chloride of potassium is more than sufficient to furnish the sulphuric acid with base, we leave the excess of chloride as chloride of potassium, as above stated, and we now ascertain how much chlorine is in combination with this potassium, and deduct it from the entire amount of chlorine; the residue should then be distributed to sodium, and estimated as *chloride of sodium.*

We may, however, estimate the chloride of sodium by another method. As we have already determined the phosphate of soda,

the sulphate of potash, and the chloride of potassium, or sulphate of soda, as the case may be, we may ascertain the amount of chloride of sodium, providing no reduction has taken place, by adding these together and deducting their gross weight from the entire weight of the fixed alkaline salts. It is better, however, to take the chlorine remaining after saturating the potassium and ascertain how much chloride of sodium it would form, and add this to the sum of the other salts. If now the entire weight exceed the gross weight of the salts, as obtained after incineration, we may fairly conclude that a reduction has taken place, or that some base has been lost during the manipulation. On the other hand, if it fall short, it will indicate some error in the analysis. These then may be used as confirmatory tests of the accuracy of our operations.

It is scarcely necessary to state that if the sulphuric acid is just sufficient to neutralize the potash, the entire amount of chlorine should be given to the sodium.

Extractives. Having now estimated the various inorganic salts, together with the urea, the uric acid and the mucus, we may add them together and take their gross weight from the entire weight of the solids found in the urine. The difference will indicate those substances usually put down as *extractives.* It is probable, however, that a part of the weight of these extractives is due to water which was not driven off by the heat (180°) to which the urine was subjected in estimating the solids; for we know that some of the salts found in the urine, when in their crystaline state, will retain several equivalents of water unless exposed to a much greater temperature than this: For example, the phosphate of magnesia, when in its crystaline form, $2MgO:HO.PO_5+14Aq.$ requires a heat of 347° F. to drive off all its water of crystalization. But, owing to the readiness with which many of the organic matters are decomposed it is unsafe in estimating them to apply a heat much above 180°.

As the manner of distributing the inorganic substances may be better understood by an example, we will give the method of their distribution in the analysis referred to, the results of which we have already given.

Earthy Salts. The entire weight of the earthy salts was 2.15 grains. Of this, .622 of a grain was *lime* and .03 of a grain *silica.* This amount of lime would require .799 of a grain of phosphoric

acid. For, 56 (the at. wt. of 2. equiv. lime) :72 (the at. wt. of phosph. acid) ::.622 :.799. It would therefore form 1.421 grains of bibasic phosphate of lime, ($2CaO:PO_5$) the at. wt. of which is 128. But it existed in the urine as the tribasic phosphate ($2CaO:HO.PO_5$) the at. wt. of which is 137. Therefore 128:137::1.421:1.520 grains of tribasic phosphate of lime.

By now adding the weight of the silica to that of the bibasic phosphate of lime and taking this from the gross weight of the earthy salts, we can estimate the amount of *bibasic phosphate of magnesia* ($2MgO:PO_5$.) Thus 1.421+.03=1.451. Then 2.15—1.451=.699 of a grain, the amount of bibasic phosphate of magnesia. This bibasic phosphate, the atomic weight of which is 112, really existed in the urine as the tribasic phosphate ($2MgO:HO.PO_5$) whose atomic weight is 121. Therefore 112:121::.699:.755 of a grain of tribasic phosphate of magnesia.

We have now to inquire how much phosphoric acid the .699 of a grain of $2MgO:PO_5$ contained. We ascertain this by the following proportion, 112. (at. wt. of $2MgO:PO_5$) :72 (at. wt. of PO_5) ::.699 :.449 of a grain of PO_5. We have already seen that the *lime* required .799 of a grain; therefore, .449+.799=1.248, the number of grains of PO_5 in combination with the earthy bases. The entire amount of phosphoric acid in the urine we have already ascertained to be 1.607 grains. Therefore, 1.607—1.248=.359 of a grain of phosphoric acid in combination with the *alkaline bases.*

Alkaline Salts The .359 of a grain of phosphoric acid left after supplying the earthy bases, we distribute to soda, as that is the base with which it was in combination, forming the bibasic phosphate ($2NaO:PO_5$) the atomic weight of which is 134. Therefore, 72: 134::.369:.688, the number of grains of bibasic phosphate. But it existed in the urine as the tribasic phosphate ($2NaO:HO.PO_5$) whose atomic weight is 143. Therefore 134:143::.668:.712, the amount of tribasic phosphate of soda.

Sulphuric acid. We now distribute the sulphuric acid. The analysis gave 1.606 grains, which will require 1.927 grains of potash, for, 40. (the at. wt. of SO_3) :48 (the at. wt. of KO.) ::1.606 (the entire amount of SO_3) :1.927, (the amount of KO required.) We have now to inquire how much chloride of potassium is required to represent 1.927 grains of potash. This may be ascertained by the proportion 48, the at. wt. of KO: 75, the at. wt. of KCl.:: 1.927.:3.011, the amount of chloride of potassium necessary to

represent 1.927 grains of potash. We have already determined by the analysis that there was present in the urine, sufficient potassium to represent 5.770 grains of chloride of potassium (KCl.) There is, therefore, more potassium present than is required to neutralize the sulphuric acid, and we may from that conclude that all the sulphuric acid was in combination with potash, forming sulphate of potash. To obtain the weight of this last salt we must add together the sulphuric acid and the potash required; thus, 1.606+1.927=3.533, the amount of sulphate of potash.

We may now deduct the 3.011 grains of KCl which originally existed as potash, from the 5.780 grains of KCl, and the difference, 2.759 grains, indicates the amount of KCl in the urine.

The fixed alkaline salts yielded 7.63 grains of chlorine; we have, however, seen that a certain amount of chlorine was in combination with potassium, forming 2.759 grains of KCl, which would require 1.324 grains of chlorine, for 75 :36 ::2.759 :1.324. This, deducted from the 7.63 grains of chlorine, leaves 6.306 grains, which must now be furnished with as much sodium as it will neutralize, and be estimated as chloride of sodium.

The 6.306 grains of chlorine would require 4.028 grains of sodium and form 10.334 grains of chloride of sodium.

For, 36, (the at. wt. of chlorine) :23, (the at. wt. of sodium) ::6.306:4.028. Therefore, 6.306+4.028=10.334 the amount of *chloride of sodium.*

We may now compare the sum of the weights of the several fixed alkaline salts, with their gross weight as determined after incineration, and observe how they correspond.

Their weights determined separately, were as follows:

Phosphate of soda, (bibasic)	.668	grains.
Sulphate of potash	3.533	"
Chloride of potassium	2,759	"
Chloride of sodium	10.334	"
Total	17.294	"
Their gross weight as determined from the incinerated residue was	17.150	"
Difference	.144	"

On comparing these results we find a difference of but little more than one-tenth of a grain. In case a reduction had taken place, or

any loss had occurred during the first part of the manipulation, this is the direction in which we should look for a discrepancy. When, however, our results coincide as closely as this, we may be well satisfied.

In making out the results of our analysis, we include with the alkaline salts, the chloride of ammonium, which has been made out by a separate analysis. We must also remember that the bibasic phosphate of soda existed in the urine in the tribasic form.

By now adding together the different constituents, both organic and inorganic, which have been estimated, and deducting their weight from the entire weight of the solids, we obtain the weight of the extractives. The analysis gave as solids, 52.5 grains. The different constituents which were estimated separately, amounted to 43.00 grains. Therefore, 52.5—43.00=9.50 grains of *extractive matter.*

The specimen of urine, from whose analysis the various results above mentioned were derived, also contained *oxalate of lime.* As this salt is an abnormal ingredient, it was carefully removed before subjecting the urine to analysis, and we have thus far in our consideration, omitted to speak of it.

The presence of this salt is most readily detected by the microscope, and it may be quantitatively estimated by the method already given in the number of this Journal before referred to.

A specimen of 1000 grains of urine, furnished by the same person, analyzed a few days after the above, yielded .075 grains of the oxalate; and several examinations, made at different times, have result-in the detection of about the same amount. The person from whom these specimens have been obtained has been conscious of passing this salt, in various crystalline forms, for about two years. The urine was carefully examined for *lactic acid*, but not a trace was discovered.

We may now reduce the results of the analysis to a tabular form, and in so doing, we will include the oxalate of lime, which will cause the results to differ somewhat from those already given. The amount of urine voided during twenty-four hours, was 27 fluid ounces. Its specific gravity at 60° F. was 1024. The reaction acid. The results of this analysis we indicate by A. The results characterized by B are those from an examination of the urine of a woman ninety-five years of age. The total amount for twenty-four hours was not noted. The specimen examined, however,

was taken from an entire day's voiding. It had a strong acid reaction, and a specific gravity of 1021.

	A.		B.	
Water,	947.425	947.425	952.100	952.100
Solids,	52.575		47.900	
Urea,	20.700		17.040	
Uric Acid,	.970		.780	
Mucus,	.120		.620	
Extractives,	9.500		14.886	
Organic Matter,		31.290		33.326
Phosphate of Soda,	.712		1.604	
Sulphate of Potash,	3.533		.739	
Chloride of Potassium,	2.759		4.438	
Chloride of Sodium,	10.334		4.802	
Chloride of Ammonium	1.567		1.621	
Alkaline Salts,		18.905		13.204
Phosphate of Lime,	1.520		.988	
Phosphate of Magnesia,	.755		.362	
Oxalate of Lime,	.075		.000	
Silica,	.030		.020	
Earthy Salts,		2.380		1.370
		1000.		1000.

ART. II.— *Observations on Phthisis Palmonalis.* By C. CHAPMAN, M. D., Winchester, Missouri.

Pulmonary Consumption is a subject that has for centuries engaged the minds of the most learned of the medical profession, and even now it is looked upon with but little hope of cure. But the old proverb tells us, that in a multitude of counselors there is safety. Knowing such to be the case, I will briefly give my views concerning the Pathology, treatment, &c., of Phthisis Pulmonalis, hoping at the same time that it may call forth reflections and farther investigations upon this very obscure disease.

The lungs, we know, perform a very important office in the human body; being constructed so as to expose the greatest possible sur-

face to the influence of atmospheric air; there being no less than two hundred millions of air cells in the human lungs, and those cells so situated as to absorb oxygen through their walls on every side; this coming in contact with the venous blood flowing through their innumerable capillaries, changes it from venous to arterial, by giving out the products of the worn down tissues of the body, and receiving oxygen in return. Thus it is through the lungs that the blood is purified, and much of the worn down tissues of the body are disposed of.

But we must not fail to keep before our minds this important fact, viz: That pure blood is necessary to the healthy action of every organ in the human economy.

Now we know that the blood carries with it materials for building every part of the body. If, therefore, the materials are deranged, the parts they supply must inevitably suffer, and if still supplied with the same unhealthy matter, they will finally perish. And further: The smaller the amount of pure blood sent to a part the smaller will be the portion of building material sent there, and slower will be the growth of that part, and vice versa. We have a striking illustration of this in the fœtal circulation.

But to come nearer the subject before us. *I affirm that as long as a sufficient quantity of pure blood flows through a part, that part cannot die.*

We all know that the right arm of a blacksmith is larger and stronger than his left. Why is this? Because by its constant action its tissues are stimulated, causing a greater amount of blood to flow through the parts; consequently they receive a greater amount of building material. *Ubi stimulus ibi fluxus.* We know also that atrophy will arise from deficient circulation.

But let us go further. Cut off the greater portion of the circulation, by tying a cord around your arm, for instance, and what will be the result? We find that disease soon takes place, and if the obstruction is not removed, the limb will perish. But let us cut the circulation entirely off, and what will follow? Death of the part will be the result, and nature, if let alone, will cast it off as a foreign body.

Let us now ask what is the condition of a diseased lung, and what its symptoms? We know that the whole lung structure is not primarily affected. The upper lobes suffer first, and the upper portion of these lobes. Tubercles are there deposited in the mucus mem-

brane of the air cells, carried thither by the blood. These deposits gradually increase in size—the partitition walls between two or more of them give way—they coalesce, and softening ensues. The many thousand capillaries that once acted normally, now refuse to carry blood to the legions of air-cells that are there to receive it. Thus the current of life is checked, the material for supplying that portion of the lung is cut off; the air-cells shrivel and die; they no longer belong to that living organ, but become foreign bodies, and are by an effort of nature thrown off; at the same time the blood that was there being carried to exchange its carbonic acid for oxygen is compelled to return with its load of carbon and worn down tissues of the body. Thus we see the circulation cut off little by little; we see also the lungs die in the same ratio, and as they perish, nature tries to rid herself of the dead matter, until finally the lungs no longer receive sufficient blood to sustain life.

In the later stages of Phthisis we find enlargement of the right and left auricles of the heart; also anasarca of the feet and ancles. Why is this? The venous blood that was being carried from the right side of the heart, through the pulmonary arteries into the lungs, finding the greater portion of the pulmonary capillaries impervious, is compelled suddenly to return. Hence we have increased muscular contraction of the right ventricle, and a yielding of its walls to the pressure of contained blood. We also know that there is no surer cause of anasarea than a dilatation of the right cavities of the heart. We find emaciation to be a very prominent symptom in this disease; also coldness of the extremities. The whole body is easily afflicted with cold. Let us now see if we can account for these things.

We know that the adipose tissue of the body constitutes the great store-house of caloric. It is from this store-house of fatty matter alone that animal heat is produced. We know also that in Phthisis the healthy functions of the body are so much deranged that nature fails to lay up a sufficient store of this tissue to supply her wants; and the fatty matter being consumed faster than it is stored away, emaciation must inevitably follow.

In the third stage of this disease we see emaciation progress even more rapidly, from this well known fact, viz: In proportion as the disease advances, in the same ratio will secretion and assimilation be impeded.

We see also the exsanguined appearance of the surface; the sunken eye, with its pearly white sclerotic; doubtless denoting the anæmic condition of the circulating fluid; for we find the blood containing (among other abnormal properties) an undue amount of fibrin, and a deficient amount of red globules.

It is, I believe, an established fact, that as the fibrin increases, in the same ratio will the red globules diminish, and vice versa.

Let us for a moment view some of the indications of treatment in this disease.

I believe the most popular medicine in the eyes of the profession is cod liver oil. What is its modus operandi? Some, we know, attribute the good effects arising from its use to the small quantity of iodine it contains. As for myself, I think that the iodine adds but little to its healing properties, and did I think it here necessary, would give my reasons. Let me now ask what motive we have in view in administering this oil. Do we give it because we found it did good in cases of the same kind before, or do we have some particular object in view in administering it? As I before remarked, we find emaciation, cold extremities, and indeed a general degree of chilliness pervading the whole body, constant symptoms in this disease, and the farther it advances the more prominent will be these symptoms.

The object, therefore, in giving this oil is to supply the system with adipose matter, which is essential to life; for we see from the emaciation and other symptoms that the fatty tissue of the body is almost consumed, and if not supplied the system will perish for want of caloric.

How often do we witness the good effects arising from the use of this oil in Phthisis. We see our patient gain in flesh and in strength. He feels a natural glow of heat pervade his whole body. His color is changed, &c.

Is it the iodine that produces this change, or is it the oil alone? Now, in order to build up the body, or any organ of the body, what must be done? *Must we not try and excite a healthy flow of blood through the parts?* We know that the blood carries materials for building every part of the body, and if it is not carried in sufficient quantity to answer the demands of a part, that part will finally die. I will now repeat, that as long as a sufficient quantity of pure blood flows through a part, that part will not die. Now, can we repair a diseased organ where the circulation is in a manner checked,

and where the parts are slowly dying, unless we direct a constant flow of pure blood through that organ? I answer, never. Let us now for a moment view a diseased lung. We see it gradually die, little by little, until the whole lung has finally perished. *Why does it die?* Does a sufficient supply of pure blood circulate through its structure up to the time of death, or is the circulation cut off before it dies? I again repeat that the lung structure *cannot* die as long as it receives a sufficient quantity of pure blood.

In the treatment of Phthisis, we find that cod liver oil stands at the head. The fatty matter it contains supplies the system with fuel—which is already deficient in the body—by this means the circulation is aroused, and at the same time a general glow of warmth pervades the whole system; a greater amount of blood is sent to every part, consequently a greater amount of building material. I have for a long time believed that the circulation of the blood was too much neglected in the treatment of this disease. In order to preserve the life of a part, we must cause pure blood to circulate through that part. I see that alcohol is spoken of as a prophylactic against tubercles, and believe it to be a preventive. I do not remember at this time of knowing or hearing of an individual dying with Consumption who has during his life been in the habit of using temperately alcoholic stimulants.

How often is it the case that we see one member of a family alone surviving, when all the rest have been carried to an untimely grave by Phthisis; and by making inquiry we learn that this individual has nearly all his life been in the habit of using alcohol moderately. Why has not Consumption carried him away also? I answer, that through stimulation the blood is made to circulate through the different parts of the system, and as long as it is kept in healthy action, neither the lungs nor any other part of the body can perish.

Now I do not wish to be understood as upholding the use of alcoholic spirits as a beverage, for such is not the case. I am bitterly opposed to its abuse, but used *properly*, as a medicine, it is invaluable.

If my views regarding the use of cod liver oil are correct, why will not any other oil answer the same purpose.*

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*The reader is referred on this point to one of the lectures of Dr. Thompson on Consumption, among the selected articles in the March No. of the Journal. His experiments affirm the good to be derived from animal oils, especially neat's foot oil, but negative any such expectation from the use of vegetable oils in Phthisis, with the exception, perhaps, of cocoa nut oil.—[ASST. ED.

I believe also that if the stomach is too weak to retain it, the same effect may be produced by external application; for by this means it will be taken up by absorption, and converted to the wants of the system in the same way.

I also regard counter-irritation an important step in the treatment of this disease; also, due regard to exercise, regimen, &c.; and if the blood is lacking in any important principle, supply the lack. But above all watch with an eagle eye the state of the circulating fluid, always keeping in mind this important fact, viz: That as long as a sufficient quantity of blood flows through a part, that part will not die.

Hoping shortly to see something more able upon this very important subject, these scattered views are respectfully submitted.

Art. III.—*Period of Gestation.*

Dr. Dawson:—From the earliest history of medicine down to the present time, the question has been mooted: How long after conception is it to the birth of the full grown infant?

Writers, equally noted for their medical attainments and skill, have been found advocating opposite opinions upon this subject.

Ryan gives a list of notables, pro and con, in the celebrated Gardiner-Peerage case. And the opinions of these men are referred to by almost all the obstetric writers since that day, to substantiate their own.

Without expecting to decide this question (for who shall decide when doctors disagree?) in regard to the duration of utero-gestation, I will bring forward an instance, where the impregnated woman herself had no such latitudinarian views as are ascribed to many writers on Midwifery. As the sequel will show, she was a *literal constructionist.*

In the summer of 1850 I was requested to visit Mrs. ——, who, it was said, "was expecting to be confined."

Having no acquaintance with the family, I inquired of the messenger, whom I supposed to be the lady's husband, where they lived; and as he did not expect to go directly home, I set out for the house forthwith.

On entering the house and paying the customary compliments—as a further introduction I began to talk about "matters and things

in general"—and then to make casual inquiries respecting herself. Finding her at work as I entered the house, of course I was somewhat surprised; but supposing there was a little house-work to be done in the emergency, and that it was such as she was unwilling to impose on any one else—no other female being present at the time—the supposed *necessity* of the case was sufficient to account for the present posture of affairs.

Among other inquiries, some like the following were asked, and the subjoined are substantially her answers:

How did you rest last night? Very well, better than usual. I remarked that it was commonly said, "a calm generally precedes a storm." How did you relish your breakfast? Very much, my appetite is excellent. Have you any headache this morning? Not at all, I am never troubled that way. Have you anything like labor-pains? No sir, I feel like a lark.

Thinking it probable she had misapprehended my last question, I proceeded to particularize—endeavoring to elucidate my inquiry about "labor-pains." Satisfied that she comprehended my meaning, and that "coming events were casting their shadows *before*" in her case, and though she did not need a physician then she would soon I not only saw *no reason* why I should be sent for, but seriously began to mistrust that I had "got into the wrong box." To extricate myself from this difficulty, and solve the problem, was now the height of my ambition. How to do it, though a Yankee, was something of a puzzle. After a little reflection, said I: Did your husband come after me this morning? I suppose so, said she, I told him to. Here was a fix—sent for to accouch a woman who had no head-ache—relished her breakfast—had no labor-pains, and felt "like a lark."

Few physicians, I presume, are sent for to perform obstetric services under such circumstances. The *reason* that prompted her to send for me was not yet apparent to my mind, and I did not wish to ask for it directly.

While in "a brown study" how to get along without a seeming censure, it occurred to me to ask if "her time was up." Were you expecting to be confined before long? was my inquiry touching this point. With a promptitude that amounted to "a dead certainty" she said: Yes sir, the time is up *to-day;* I have heard it said that women went *just nine months*, and I thought I would send for you, and have you on hand.

My thoughts then began "to run thick and fast." What if "her time is up," according to her reckoning, as long as there are no indications of parturition, I wonder if she expects me to remain till it occurs! Suppose it should be delayed for two weeks, it will be a costly entertainment to them, and a losing business to me! How to smooth the matter over and get excused was now my great anxiety. Desirous of giving no offence, and at the same time to pave the way for my release, I remarked that while nine months was the ordinary time, still there was some uncertainty about it. Precision was impossible. Sometimes two or three weeks would elapse after the expiration of "the time," before confinement took place. In her case, *in particular*, as long as she was so well I thought she had better give herself no uneasiness about it, and in due time nature would give her fair warning—comforting her with the assurance of the "old doctor"—"when the *pear* is ripe, it will fall off." Still she was unwilling that I should leave—saying that "she had sent for me to have me in readiness, and as she preferred me to any one else, she did not like to have me go." Endeavoring to tell her how she would feel when labor-pains came on, and with the promise that I would be from home as little as possible—and being so near could be there in a few minutes after she needed me—she finally consented to my going—with the express condition that I should "make haste speedily" when she sent for me. Three days after this interview the summons came, and I fulfilled my promise to the letter—and after eight or ten hours she was safely delivered of a fine healthy child.

Perhaps the junior members of the profession need not be told that this was her *first* child.

MEDICUS.

PART SECOND.

AMERICAN AND FOREIGN INTELLIGENCE.

ART. I.— *On the varieties of the Human Race.*

The various points of difference which characterize the varieties or races of mankind, may be arranged into those which refer to the skull alone, and into those which are founded upon other and different portions of the body.

The craniological investigations of the last half century, with those of the last century, bid fair to afford us data for a much more enlightened classification of the human family than has yet been attained. The great works of Blummenbach and Morton, with those of Cuvier, Camper and Pritchard, have resulted in a more rational division of the human species.

The idea of the unity of origin of the human race, according to the present interpretation of Scripture, is beginning to be shaken by the investigations of the most learned ethnologists.

The writer of this lecture does not pretend to a sufficient amount of information on this important and interesting subject to form a decided opinion in the matter, but is free to acknowledge that the data of modern ethnologists, particularly those of his friend Dr. Samuel G. Morton, lead him strongly to the opinion expressed by this eminent naturalist and scholar. His words are as follows:— "I may here observe, that whenever I have ventured an opinion on this question, it has been in favor of the doctrine of the *primeval* diversities among men, an original adaption of the several races to those varied circumstances of climate and locality, which, while congenial to the one are destructive to the other; and subsequent investigations have confirmed me in these views."— *Catalogue of Skulls of Man and the Inferior Animals,*" by Dr. MORTON.

I am well aware that Drs. Carpenter, Pritchard, and indeed almost all naturalists, have heretofore and do now hold to the present interpretation of Scripture, in reference to the oneness of mankind.

It must be recollected however, that the progress of Science, whether astronomical, geological, historical or ethnological, at the same time that it ultimately is found to coincide and even give strength (if this be possible) to Scripture truths, does, nevertheless, not unfrequently alter very materially the interpretation of particular passages. Who does not know that the promulgation of the Copernican system in astronomy, from the fact that this system conflicted with the interpretation of holy writ then in vogue, produced the most bitter and unrelenting persecution? The history of a Galileo is the history of opposition of preconceived opinions to physical, and may I not add immutable, truths! So, also, even in our own day, the truths of geology are rapidly revolutionizing the interpretations of Scripture, and producing that conflict which will always exist when new truths come in opposition to the prevailing opinions of men. Happily, however, a careful and manly exposition of these truths, and a clear demonstration of their harmony with divine revelation, is rapidly dispelling the mists of prejudice and overthrowing the opposition which is based on preconceived notions. So, also, with ethnological science, we doubt not when the whole truth shall be known, that no discrepancy will be found to exist between it and the revealed word of life.

It is true that the differences in the various races of mankind do not amount to what is technically termed a specific difference, that is, man at the head of the animal creation is but one species, the common definition of which is, that it procreates with its own species alone. In this case it is the more distinct, inasmuch as no hybrid or mule is as yet known to exist. The species is continued in all the varieties of the race, whether black, red, or white.

"Further researches (says Dr. Morton) into ethnographic affinities, will probably demonstrate that what are now termed the *five races* of men would be more appropriately called *groups;* that each of these groups is again divisible into a greater or smaller number of primary races, each of which has expanded from an aboriginal nucleus or centre. Thus I conceive that there were several centres for the American group or races, of which the highest in the scale are Toltecan nations, the lowest the Fuegians. Nor does this view conflict with the general principle, that all these nations and tribes have had, as I have elsewhere expressed it, a common origin, inasmuch as by the term is only meant an indigenous relation to the country they inhabit, and that collective identity of physical traits,

mental and moral endowments, language, &c., which characterize all the American races. The same remarks are applicable to all the other human races."

Without discussing the points of difference in the various races of men, as found in the body in general, such, for instasce, as those of the hair, the skin, the pelvis, or other portions of the skeleton, I propose, first, to consider the peculiarities in craniological conformation, and secondly, to examine how far these correspond with some of the more prominent traits of character of the different races of men.

The chief differences in cranial developments of the various groups, are found to exist in their relative size as a whole, both by external and internal measurements, and the different proportions in which the several parts of the skull and brain are found. In order to understand the division of the human family, and to discuss with propriety these variations in the crania, it will be necessary to adopt some classification to which the measurement shall refer. This object has been attempted by a host of the best naturalists of the past and present century, no one of whose systems has been as yet generally adopted. Linæus referred all mankind to five races, viz: The American, the European, the Asiatic, and the African, and individuals of preternatural conformation. Buffon proposed six divisions, viz: 1. The Hyperborean or Laplander, which embraces the Polar nations; 2. The Tartar, which includes the Eastern and central nations of Asia; 3. The Southern Asiatic, embracing the South-Sea Islanders; 4. The European; 5. The Ethiopian; and 6. The American. He afterwards reduced the number to five, by uniting the Laplanders to the Tartars, inasmuch as he regarded the one as a degenerate branch of the other. The classification of the Count de Buffon was adopted, with certain modifications, by the distinguished Professor Blumenbach of Gottingen. Cuvier reduced the races still more, and made but three divisions, viz: The Caucasian the Mongolian, and the Ethiopian. Malte-Brun, on the other hand, makes sixteen races, denominating the American nations but one.

The system of Blumenbach, as modified by Morton, is, perhaps, in the present condition of ethnological science, the best. It is the one I adopt, and is as follows:

The whole human species is divided into groups and families. Of the first there are six in number, viz: 1. The Modern Caucasian

group; 2. The Ancient Caucasian group; 3. The Mongolian group; 4. The Malay group; 5. The American group; and 6. The Negro group. The first group, or Modern Caucasian, is divided in six families, viz: The Teutonic family, embracing as members—1. The Germans; 2. The English; 3. The Anglo-Americans. Secondly, The Pelasgic family, embracing—1. The Persians; 2. The Armenians; and 3. Circasians, Thirdly, the Celtic family, embracing the native Irish; Fourthly, the Indostanic family—Bengalese, etc. Fifthly, the Semitic family—the Arabs. Sixthly, the Nilotic family —the Fellahs.

The second or Ancient Caucasian group, includes but two families, the Pelasgic or Græco-Egyptians and the Nilotic or Egyptians.

The third or Mongolian group, includes but one family the Chinese; while the fourth group or Malay, embraces two—the Malayan and the Polynesian families.

The fifth group or American, contains two families—1. The Toltecan, including—1. The Peruvians; and 2. Mexicans. Secondly, the Barbarous Tribes, embracing—1. The Iroquois; 2. The Lenape; 3. The Cherokee; 4. The Shoshone, etc.

The last or Negro group, has four families—1. The Native African family; 2. The American born Negroes; 3. The Hottentots; and 4. The Alforian family or the Australians.

It must be borne in mind that there are some three modes of making external measurements of the skull. The plan adopted by Professor Camper, is that in which the facial angle, named after the inventor of this process, is obtained by running a base line along the side of the skull, parallel to the meatus auditorius externus and the alveolar processes of the upper jaw, which is traversed or met in front by another, descending over the projecting portions of the forehead and face. This mode of measurement has been improved by the invention of an apparatus by my late friend Dr. TURNPENNY, called the Facial Goniometer, an accurate cut of which may be seen in Morton's Crania Americana.

The second mode is that made use of by Morton and Phillips, by which, with a little arithmetical calculation, the coronal, sub-coronal, and anterior and posterior regions of the cranium, are measured from the external surface. Under this head must also be enumerated the measurements made by ordinary callipers—such as the longitudinal, parietal, frontal, vertical, occipito-frontal diameters, &c.

Thirdly, we have the strictly phrenological measurements, which assume to give the size of particular regions and individual organs. These are accomplished by the craniometer, callipers, dividers, the above-named measuring frame, straps, &c.

Lastly, we have the very superior mode of measuring the solid contents of the cranium by means of shot, one-eighth of an inch in diameter, by which we obtain the *absolute capacity* of the skull or the bulk of the brain, *in cubic inches*. This plan we believe was first adopted by Dr. Morton, and adds greatly to the value of his cranial measurements made *by his own hands*.

It will not comport with the length and object of this lecture, to give the various external measurements of the skull, as found in the different groups or families of man. The measurements of Camper, which at best can give but an approximation to the size of the anterior lobes of the brain, place the most obtuse angle, consequently, the largest anterior lobes of the brain, in the crania of the modern Caucasian group; or, according to Pritchard, (Physical History of Mankind, I, 288, 3d ed.: London, 1836,) the European, in which he says, the facial angle is as high as 80, while in the Mongolian it is 75, and in the African 70. We will not stop, however, to examine these external proportions, inasmuch as the customs and habits of the different nations modify the shapes of their heads, almost to an infinite extent, some elongating them backward, others forcing their crania and brains to grow upwards, while others by the application of pressure, flatten their heads in every direction. One fact has been established by the internal measurements of the skull, and that is, that in all the changes of form, the solid contents of the head are not changed, but remain the same under all the disfiguring processes to which they are subjected, and as the object in making any or all of these measurements is not so much to obtain the amount of bony matter in the head, as to understand the amount of brain, that process which will secure this, or an approximation to it, to us will be the best.

Two kinds of measurements are desirable—one which will teach us the *absolute* size of the brain, as a whole, and the other the relative sizes of its different parts. We conceive that the first is obtained by the process of Phillips and Morton, which is described as follows in the Crania Americana, p. 253:

"A tin cylinder was provided, about two inches and three-fourths in diameter, and two feet two inches high, standing on a foot and

banded with swelled hoops, about two inches apart, and firmly soldered, to prevent accidental flattening. A glass tube, hermetically sealed at one end, was cut off so as to hold exactly five cubic inches of water by weight at 60 deg. Fahrenheit. A float of light wood, well varnished, two and a quarter inches in diameter, with a slender rod of the same material fixed in its centre, was dropped into the tin cylinder; then five cubic inches of water, measured in the glass tube, was poured into the cylinder, and the point at which the rod on the float stood above the top of the cylinder, was marked with the edge of a file laid across its top; and the successive graduations on the float-rod indicating five cubic inches each, were obtained by pouring five cubic inches from the glass tube *gradated*, and marking each rise on the float-rod. The graduations thus ascertained were transferred to a mahogany rod fitted with a flat foot, and these subdivided, with compasses for the cubic inches and parts. In order to measure the capacity of a cranium, the formina were first stopped with cotton, and the cavity was then filled with shot, poured into the foramen magnum, until it reached the surface, and pressed down until the skull would receive no more. The contents were then transferred to the cylinder, which was well shaken in order to pack the shot. The mahogany rod being then dropped down, with its foot resting on the shot, the capacity of the cranium in cubic inches is at once read off on it."

With the above apparatus, some six hundred and twenty-three crania, of various races and families of man, have been measured by Dr. Morton, and the following interesting results have been obtained by the process. The modern Caucasian group, embracing six families has the largest average sized brains, and of these the first family or Teutonic, including Germans, English, and Anglo-Americans, is pre-eminent for size of cranial contents, the mean being *ninety-two cubic inches*. The largest and smallest heads were found among the Germans, and measured respectively one hundred and four cubic inches and seventy cubic inches. The mean of the German and Anglo-American skulls was in both ninety inches, while that of the English was ninety-six. It must be recollected, however, that there were eighteen German heads measured, and but five English and seven Anglo-American.

The mean of the second family of this group, the Pelasgic family, embracing the heads of Persians, Armenians, and Circassians, was

eighty-four, while the smallest was seventy-five and the largest ninety-four inches.

The Celtic family, which includes the native Irish alone, in six heads measured, had a mean of eighty-seven inches, the smallest being seventy-eight and the largest ninety-seven inches.

Thirty-two Bengalese heads had a mean of eighty cubic inches, while three Semitic or Arab heads had a mean of eighty-nine, and seventeen Fellahs averaged eighty cubic inches, solid contents. The smallest of these measured sixty-six and the largest ninety-six cubic inches.

The second or Ancient Caucasian group, including the Pelasgic and Nilotic families, or the Græco-Egyptians and Egyptians, averaged: the first, by which is meant Greeks settled and living in Egypt, eighty-eight cubic inches, and the second or native Egyptians eighty inches. There were eighteen Græco Egyptians and fifty-five Egyptian heads.

The Mongolian group includes the Chinese, of whose heads six were measured; their mean was eighty-two inches.

The Malay group, including the Malayan and Polynesian families, averages, for the first eighty-six, and for the second family eighty-three inches—total mean eighty-five inches,

The American group affords a large number of skulls from which to draw the mean contents, being one hundred and fifty-five Peruvians, twenty-two Mexicans, and one hundred and sixty-one of the Barbarous Tribes, viz: the Iroquois, Lenape, Cherokee, Shoshone, &c. The Peruvians average seventy-five inches; the Mexicans seventy-nine inches—these together form the Toltecan family; while the Barbarous Tribes above-mentioned average eighty-four inches, and the general mean of the whole American group is found to be seventy-nine inches, four inches, as we will see, below the average of two families of the Negro group. These families are the Native Negro and the American-born Negro. Of the first of these, sixty-two heads were measured, and of the last twelve. The mean of the other two families of the Negro group was found to be, in the Hottentot seventy-five, and in the Alforian or Australian seventy-five cubic inches.

"In this table (says Dr. M.) the measurements of children, idiots and mixed races are omitted, excepting only in the instance of the Fellahs of Egypt, who, however, are a blended stock of two Cau-

casian nations—the true Egyptian and the intrusive Arab, in which the characteristics of the former predominate."

"No mean has been taken of the Caucasian race collectively, because of the very great preponderance of Hindu, Egyptian and Fellah skulls over those of the Germanic, Pelasgic and Celtic families. Nor could any just collective comparison be instituted between the Caucasian and Negro groups in such a table, unless the small-brained people of the latter division (Hottentots, Bushmen and Australians,) were proportionate in numbers to the Hindoos, Egyptians and Fellahs of the other group. Such a computation were it practicable, would probably reduce the Caucasian average to about eighty-seven cubic inches, and the Negro to seventy-eight at most, perhaps even to seventy-five, and thus confirmatively establish the difference of at least nine cubic inches between the mean of the two races."

According to the same authority, the average size of the brains of the five groups above-named, in cubic inches, is, for the Caucasian eighty-seven inches, the Mongolian eighty-three inches, the Malay eighty-one inches, the American eighty-two inches, and the Ethiopian seventy-eight inches. The extremes in either direction in the respective groups will not materially affect the result or mean, and need not, therefore, be taken into account, inasmuch as these extremes may be, and probably are, the result of accidental causes. By the above table it will be seen that the Caucasian has the largest amount of brain, by five cubic inches, over the Mongolian. The Mongolian has one cubic inch more than the American, and the latter one more than the Malay, while the Ethiopian has three inches less than the Malay and nine less than the Caucasian.

The approximations would be much more satisfactory, could we have, in addition to the measurements of the whole brain, those of the individual parts. Physiologists are now fully willing to admit a difference of function to the several portions of the brain; and the best modern writers on this subject, Dr. Carpenter among them, admit that the cerebrum is the organ of intellectuality, while the cerebellum is more immediately connected with the animal, especially the voluntary motor functions.

Could accurate measurements be made with this view, they would throw much light on natural characteristics, as well as individual traits of character. As it is, the measurements, perfect as

they are in reference to the whole brain can only instruct us in the general force of character exhibited by the different races of mankind.

It is a striking fact, that the race which seems capable of the highest mental acquirements, that which leads in civilization in its widest sense, is the one which has the largest average-sized brain. And it must be recollected, that the skulls from which these measurements were made, were of the lower classes of the community, while the skulls of most of the other varieties, with the exception, perhaps, of the Ethiopians, were from among the princes, chiefs and priests. Should the heads of the leading minds now in action in the Caucasian race be examined, they would doubtless give a much larger average than eighty-seven cubic inches. One head in Dr. M.'s collection, of a Dutch gentleman, measures one hundred and fourteen inches. At the same time it must be stated that the Hindoo heads, which form but a very small proportion of the Caucasian heads measured, "are probably smaller than those of any other existing nation. For example, seventeen Hindoo heads give a mean of seventy-five cubic inches."

The Mongolians measured, consist of Chinese and Esquimaux, and those of the latter give a mean of eighty-six inches, while seven Chinese give but eighty-two.

The Malays embrace Malays proper and Polynesians, while the Ethiopians were all unmixed negroes.

In reference to the American heads, the Peruvians were found to have the smaller and the Mexicans a larger amount of brain, and the Barbarous nations the largest amount of all—the proportions being, for the Peruvians collectively, seventy-six inches, the Mexicans seventy-nine cubic inches, and the Barbarous Tribes eighty-two inches.

These facts should be borne in mind in connection with the conquest of this continent. The facility with which the weaker Peruvian was overcome by the invader, the resistance of the Mexican, and the almost unconquerable ferocity and great resources exhibited by the various Barbarous Tribes, laboring as they do under all the disadvantages of ignorance of the arts of war and of civilization.

It is well known that these barbarous tribes are even now continually making inroads upon the civilized settlements, and require strong military resistance to keep them at all peaceable or within their own boundaries.

My next object will be to give a slight sketch of some of the prominent facts and traits of character presented by the several groups of the human family, in order that a comparison may be made between their history and their cerebral developments. And first, in reference to the Caucassian group, both Ancient and Modern. These remarks must necessarily be brief, and will be confined entirely to this group.

This group is divided into the Caucassian proper and the Persians; 2d. The Germanic family, divided into the Teutonic and Sclavonic varieties; 3d. The Celtic family; 4th. The Arabian family; 5th. The Lybian family; 6th. The Nilotic family; 7th. The Indostanic family.

A region remarkably fertile, between the Black Sea and Caspian, termed Caucasus, gives the name to these families, and their various sub divisions. The Caucassians proper are found only in the valleys and on the mountains of Caucasus. This locality has generally been selected as the spot on which the first of mankind existed, and from which many, if not all nations of the earth have been peopled. Among the varieties which inhabit this tract of land are the Circassians, celebrated the world over for their remarkable personal beauty, and we may add, while in their fastness for their courage and love of country. The successive autocrats of Russia have in vain squandered millions of men and money in the attempt to reduce these beautiful mountaineers.

"They are distinguished by a fair skin, arched and narrow eyebrows, very long eye-lashes, and black eyes and hair. Their profile approaches nearest the Grecian model, and falls little short of the beau-ideal of classic sculpture."—*Cran. Amer.*

They are shepherds and agriculturists, and in war, which is their pastime, active and vigilant.

The Georgians are as beautiful as the Circassians, with the same style of feature, but a darker complexion; are more literary and refined than their neighbors, but are less warlike, and fond of music.

The Abassians, Ositinians, Inguches and Kists, are smaller tribes, of more or less power, but degraded by the policy of Russia and the religion of Mahomed.

The second branch, or Persians, form the Eastern portion of the Caucasian family, and have always been distinguished, not only for their arts, literature, and general refinements and luxury, but at several epochs for their warlike propensities. They have, however, been over-run by Mongols and Tartars, who have so long amalgamated with them, that in the larger towns they can scarcely be distinguished from the latter. In the mountainous regions, however, they, like the Welsh in Wales, and the Highlanders in Scotland, retain many of their national traits, and indeed are said very much to resemble in person and general character, the Highlanders of the North of Scotland. Their complexion, however, is naturally sallow, and even almost black. These latter peculiarities are much modified in some regions by a mixture with Circassian and Georgian blood. This has much improved their physical beauty, and not at all deteriorated their intellectual powers. It is said, indeed, that there is not a man of rank or power from the King down, who is not descended, on the mother's side, from a Circassian or a Georgian. These men are generally tall, erect and graceful.

The Modern Persians are polite, and very accessible to flattery. The Court language is Turkish, and the religion Mahomedan. The Parsees and Ghebers, however, still worship the Supreme being under the image of fire, and are thence termed Fire Worshippers. We are all acquainted with the story in Moore's Lallah Rook of this sect.

Sir William Jones' account of this people, and his numerous translations from their language, of poetry, love and philosophy, have made Europe and America more or less familiar with their habits and modes of thought.

The ascendancy of the Mahomedan religion has, in modern times, been highly detrimental to their intellectual and moral developments.

The Ghebers or Fire Worshippers, who paid their devotions to the Almighty through the image of the Sun, have been the objects of the special vengeance of the followers of the Prophet. A chieftain of this sect is made the object and hero, with an Arabian maid, the

heroine, of Moore's sweet poem, the Fire Worshippers. He introduces him to the reader in the following manner:

"One of that ancient hero line,
Along whose glorious currents shine
Names, that have sanctified their blood
As Lebanon's small mountain-flood
Is rendered holy by the ranks
Of sainted cedars on its banks!
'Twas not for him to crouch the knee
Tamely to Moslem tyranny;
'Twas not for him whose soul was cast
In the bright mould of ages past,
Whose melancholy spirit, fed
With all the glories of the dead,
Though framed for Iran's happiest years,
Was born among her chains and tears!
'Twas not for him to swell the crowd
Of slavish heads, that shrinking bowed
Before the Moslem as he passed,
Like shrubs beneath the poison blast—
NO—far he fled—indignant fled
The pageant of his country's shame;
While every tear her children shed,
Fell on his soul like drops of flame:
And as a lover hails the dawn
Of a first smile, so welcomed he
The sparkle of the first sword drawn
For vengeance and for liberty!"

The various Wandering Tribes, under the title of Iligats, Koords and Afghans, are Roving hordes, who are by turns, cultivators, shepherds, soldiers and freebooters.

The Pelasgic branch derives its name from Pelasgi, inhabitants of Thessaly. They were enterprising and migratory, and rapidly spread over all Greece and passed into Italy. In Greece they were the progenitors of the Acheans or Hellenes, having, for political purposes, assumed the latter name. In Northern Italy, they founded the colonies of the Etruscans, the most enlightened and refined people of this favored country, previous to the dominion of the Romans.

No man can visit the ancient cities of learning and art in Italy, without being struck with the beauty and finish of the domestic, ecclesiastic, and rustic utensils, which still remain in the museums of Florence, Rome and Naples, of this ancient people. They seem to have excelled all their neighbors in all the elegant arts, and the refinements of civilized life.

They long resisted the incursions of their more warlike neighbors, the Romans, but finally yielded, as all other nations have done, before a purely military spirit. They, however, left the remains of their refinement and intelligence, on which Rome built her literature and art, ere she conquered Greece and other more civilized portions of the globe.

The museums of Florence and Naples, and other portions of Italy, exhibit collections of culinary apparatus, agricultural implements, as well as surgical and medical instruments, which will vie successfully with the most approved of modern times. Some of the cooking stoves, for instance, in the museums of Naples, are at once small, compact, and so arranged as to accomplish the greatest number of purposes with the least possible expenditure of fuel. The silver knife and specula of the surgeon are there in their most approved forms—and even specimens of pills as well as loaves of bread in a most wonderful state of preservation, may be seen there. These, of course, were taken from the ruins of Herculaneum and Pompeii, and are therefore Græco-Italian. The beautiful urns, chaste vases, with basso-alto and mezzo-relievos, as seen in the museums of Rome, exhibit great taste, and a high degree of refinement. These are purely Etruscan, and their beauty has only been imitated, and not surpassed by anything since that time.

The division of the Pelasgi, which settled in Greece and the Grecian Islands, became, as we all know, the most polished and refined people the world ever saw. The contrast between them and the Romans is well drawn by Horace, where he says:

> "*Graiis* ingenium, Graiis dedit ore rotundo,
> Musa loqui, præter laudem nullius avaris.
> *Romani pueri* longis rationalibus assem
> Discunt in partes centum deducere."

—And in reference to the vast superiority of the Greeks in literature, enjoins on the student the daily and nightly perusal of their authors —

> "Vos Exemplaria Græca
> Nocturna versate manu, versate diurna."

According to Bory de St. Vincent, (L'Homme, 1, p. 40,) the unmixed Greeks are above the middle stature, of fine proportions and graceful mien. The forehead is high, expanded, and but little arched, so that it forms, with the straight and pointed nose, a nearly rectangular outline. This confirmation sometimes imparts an ap-

pearance of disproportion to the upper part of the face, which, however, is in a great measure counteracted by the largeness of the eye. The Greek face is a fine oval, and small in proportion to the voluminous head. The statues of the Olympian Jupiter, and the Apollo Belvidere, convey an exact idea of the perfect Grecian countenance. The Island of Cyprus, fabled as the abode of the Queen of Love, is still, according to the testimony of travellers, the residence of the most beautiful women. They are said to be the exact models of the Venus de Medici and other antique statuary. Whether physical beauty has any connection with intellectual pre-eminence or not, I leave others to decide, but it is said, as before stated, that in Persia the most beautiful men and women, and those who occupy stations of wealth and power, are descended on the mother's side from the Georgians and Circassians, who are known to possess the finest forms and fairest features of any other nation. The equable climate of the Grecian Islands probably contributed much, with their isolation from the main land, and consequent freedom from the tyranny of other nations, to make them the intelligent and polished people which they once were. The discussions of the Portico and the Lyceum have agitated the civilized world—and the philosophy then taught has in one way or other been the philosophy of Pagan as well as Christian Europe ever since. If Greece had produced but one man, and that man Aristotle, her fame would last to the end of time. The name of one of her warriors will live as long as military ambition and personal aggrandizement shall be passions in the human breast. The traits exhibited by an Alexander, in war, are only equalled in eloqence by his father, Philip of Macedon's most potent and inveterate enemy, Demosthenes.

The world will ever look to the magnificence and taste of Pericles, the wisdom of Solon, and the justice of Aristides, for models of everything that is noble, chaste, or appropriate in architecture, simple and wise in legislation, and just in the character of a public man. Under the former, the fine arts arrived at a degree of perfection which after ages have in vain endeavored to reach, much less excel.

The poetry of Homer, Pindar, Theocritus and Sappho, is comparable only to the Dramatic Writings of Sophocles, Euripides, and Æschylus. Euclid's Problems are the problems of the world. Xenophon's and Heroditus' Histories are models for all historians—while Hippocrates, Theophrastus, Erasistratus, and Dioscorides, will

be considered the fathers of Medicine and Botany, as long as the healing art shall exist among men.

Morals, Navigation, Astronomy, Mathematics, and Poetry, have all, as is well known, flourished in the land of Hellenes, to an extent unattained in other lands. But alas, the iron rule of military power, before which the fairest creations of human genius have ever fallen, was permitted to bear sway over the isles of Greece; and Rome, with her comparatively barbarous hordes, overran the land of poetry and song—to be conquered in turn by the refinements of her conquered foes—when Greece, in the language of the poet, was "living Greece no more."

Long, however, before the political downfall of Greece, had her letters, philosophy and science entered the Roman capital, and excited the envy and spleen of her stern, patriotic sires.

Rome in after years became the military and political ruler of the then known world, yet was never able fully to maintain the unequal contest with Grecian literature and philosophy, and to this day the world still looks with eyes of gratitude to the sages of Greece for models in all that refines and elevates mankind.

True, the writings of Virgil, of Tacitus, Quintillian, Cicero, Cæsar, Livy, Terence, Horace, and many others, will long be looked up to as among the most exalted of human productions, in the particular branches of which they treat; but even these draw largely, and many of their best parts directly, from their Grecian brethren. Roman literature is but the phœnix of Grecian literature, and Roman architecture is but a bastard attempt, by way of improvement, on the perfect models of the Greeks.

These, however, were all of the great Caucassian family, and with their brethren and descendants have done their part to push on the great car of human advancement. Rome scattered at once her own and the civilization of Greece over Europe. Asia, and portions of Africa, and when she fell, her great members, Spain, Gaul, Germany, Britain, nourished the seeds sown by the sword, and to this day continue the culture of human science, and are foremost in all that elevates the race.

It is to be regretted that we have as yet no skulls of the ancient Romans or Greeks, with which to compare those of the modern Europeans. The tombs and catacombs of Europe will, it is hoped, be yet examined for specimens which will add much to Ethnological science. The catacombs and pyramids of Egypt have afforded spec-

imens not only of the ancient Nilotic races, with all their mixtures and varieties, but also of more modern times, when the Greek had colonized this fair land, and amalgamated with the original inhabitants of the soil, as well as those who followed the Greeks in the possession of this country, the Roman.

The Saracen for a time, was the friend of Literature and Science, and even gave laws to large portions of Europe. His skull, also, should be examined, and compared with that of his more favored brethren of the Caucassian race or races.

But time will not permit my drawing out the parallel further, even in this great family of the Caucassians. Suffice it to say, the descendants of the ancient Germans and Gauls have shown themselves worthy recipients of the intellectual treasures bequeathed to them by their old masters, the Romans, and Literature and Science now find able advocates and cultivators among the French, German, Anglo-Saxon, and may I not add, Anglo-American?

May I not predict, that while Europe is convulsed with political and moral revolutions, that the Muses of Antiquity will find an asylum in the land of Washington and Franklin? That here, unencumbered by the bigotry and ignorance of ages, they may build their Parnassus—and the Portico and Lyceum send forth Aristotles, Zenos, and Platos among the great mountains and beautiful vallies of Columbia?

It appears to me that America is the legitimate heir to the great legacy first bequeathed to Greece by Egypt, then to Rome by Greece, and through Rome to the whole civilized world.—*Phil. Medical and Surgical Journal.*

ART. II.—*On the Peculiarities in Figure, the Disfigurations, and the Customs of the New Zealanders; with remarks on their Diseases, and on their Modes of Treatment.* By ARTHUR S. THOMSON, M. D., Surgeon of the 58th Regiment of Foot.

Wounds and Injuries.—It was to be expected that wounds and injuries would be less frequent among the New Zealanders than the English, because there is no machinery, no building of high houses, no personal combats with fists, and no intemperance among them. The wounds of the New Zealanders heal with great rapidity. I have seen the most severe injuries do well. The famous chief, Hongi, the Napoleon of New Zealand, had a musket wound through

the chest and lungs, and lived for several years with a hole in his back, through which he could produce a whistling sound by the expulsion of the air, for the amusement of his friends, when in gay humor. This wound was ultimately the cause of his death.

Diseases of the Eye.—This class of diseases is frequent. The most frequent form is conjunctivitis and scrofulous opthalmia, which affections terminate often in partial or complete opacity.

Diseases of the Skin are much more frequent among the New Zealanders than the English. The principal form is psoriasis and scabies, modified by neglect into a most inverate disease. Tinea capitis is frequent, and also herpes circinatus—ringworm. I have not seen nor heard of a case of herpes zoster.

There are hot springs in the interior, where the natives resort for the cure of cutaneous diseases, the beneficial effects of which may either arise from the sulphur they contain, or the cleanliness they produce.

Scrofula.—Under this term is included, almost entirely, cases of suppuration, or swelling of the glands of the neck, king's evil, and some cases of curvature of the spine. There are many other diseases which, with great propriety, might be included under this head; but, without them, it will be seen how painfully prevalent this obscure constitutional disease is among the aborigines of New Zealand.

In some districts, twenty per cent. of the adult natives, taken indiscriminately, are found with the cicatrices of sores on the neck; in other districts, ten per cent. These are not loose assertions, but numbers obtained from actual enumeration. All, however, who are scrofulous, do not bear on their bodies this outward mark, for "the seeds of disease are so hidden in their constitution, that even the healthiest men, to all outward appearance, are often the first to be aken."*

No medical man can look at a number of New Zealanders without observing, strongly marked, that peculiar physical development which characterizes the scrofulous diathesis. It is the bane of the whole race, and the remote and predisposing cause of almost all the sickness and mortality which occurs among them. In early childhood we see it producing wasting of the body, fevers and bowel complaints. After puberty, the swollen and suppurating glands in

*Bishop Selwyn's Visitation Tour in 1848, published in "The Church in the Colonies," No. 20.

the neck point out that the disease still lurks in the system; from this period of life until death, exposure to the vicissitudes of the weather, poor food, and a variety of other causes, generate or excite scrofulous disease of the lungs.

The internal use of iodine and cod liver oil has lately been found by Dr. Davis, the Colonial Surgeon at Auckland, to be a very efficacious remedy. Psoas and lumbar abscesses have been known to prove fatal, and a good many New Zealanders are seen with curvature of the spine.

The causes of this great prevalence of scrofula among them are—breathing an impure air in their sleeping houses, indolent habits, insufficient clothing, bad food, intermarriages with near and scrofulous relations, and change from a tropical to a temperate climate.

To enter minutely into all the above causes of scrofula is foreign to the object of this paper; but I may observe that the sleeping houses of the natives are low in the roof, small, and often below the surface of the ground, with a small door and a small window, both of which are shut at night; and for ten hours of the twenty-four the men, women and children respire an atmosphere which is as unwholesome as the most crowded and worst ventilated houses in some of the poor parts in London. In former days the constant dread of war and war itself—the uncertainty and difficulty of obtaining food, previous to the introduction of the fruitful European potatoes, made them exert themselves in fishing, killing birds, rats, gathering seeds, &c.; but now there is little dread of war, and a few days' labor is all that is required to plant potatoes sufficient for the year, and to collect a few pigs and sell them, so as to obtain blankets and tobacco. The rest of the year is spent in smoking, reading, talking, playing draughts, the indolent occupation of cleaning flax, and sleeping. There are a few persons in some tribes engaged in commerce, and in cultivating wheat, but these are the exceptions to the general rule. Their clothing is not sufficient to protect them from the weather. It is a loose gown of common calico (a round-about) buttoned or pinned round the neck, and a rug or blanket overall; the children are similarly clad, and you often see a mother and her infant crouching under a scanty and threadbare blanket. In former days, the quantity of fish eaten was much greater than at present. Potatoes are now more easily got, and are more easily cooked; besides, they have a way of preparing potatoes and maize which is very injurious. It is by making them putrid before they eat them, by steeping them

in water. This is evidently a modern evil, the injurious effects of which, I am of opinion, are very great. Intermarriages with near and scrofulous relations must also cause and aggravate scrofula: this is often difficult and impossible to prevent, and the New Zealanders have no inborn dread to incest. I know an instance of a man who has two wives; one of them is his grown-up daughter, and she is the mother of three children to him. The last cause of scrofula among them is their migration from a tropical to a temperate climate. The New Zealand race keep an exact enumeration of the generations which have passed away since their arrival in New Zealand, and according to this it is probable they arrived in New Zealand from the tropics about six or seven hundred years ago. In the tropics, the climate has an average temperature of 84° Fahr.: the country they now live in has a mean temperature of 60° Fahr. There are not many instances of the aborigines of the tropics migrating to the temperate zone in large bodies, but in every instance which has occurred the migration has proved unfortunate.

There are many objections to this last cause of scrofula, and I admit it is difficult to comprehend how a race would increase for several hundred years in an uncongenial climate, and then suddenly decrease; but from a careful examination of the question, I am clearly of opinion that change of climate must be considered as one of the exciting causes of scrofula, for the New Zealanders flourish best in New Zealand where the climate is warmest, and worse where the climate is coldest.

All other Diseases.—The number of causes included under this head are much more numerous among the English than the aborigines of New Zealand.

During the year 1851, in different parts of the North Island, mumps (cynanche parotidæa) prevailed as an epidemic, and the metastatis to the testicle was several times observed; a few cases of diseases of the heart are recorded, and from the prevalence of rheumatism I am surprised they are not more frequent; hydrocele now and then occurs; otitis and deafness are met with, and are most frequently produced by want of cleanliness. Eight cases of erysipelas have been treated, five of them occurred at Kororariker, in the Bay of Islands, in 1838, when that place was a scene of intemperance; and it is probable this habit may have had some influence in producing the attacks, as I never saw a case of erysipelas among them in Auckland.

The New Zealanders are not intemperate; they will drink spirits if it is given to them, and they like the excitement which it produce; but a New Zealander with a shilling in his pocket will rather purchase a loaf than a glass of spirits. Scurvy is a rare disease. Dracunculus, or Guinea worm, is unknown. Elephantiasis Arabica (elephant leg), which is very common among the Polynesians in the tropical islands in the Pacific, is almost, I was going to say entirely, unknown in New Zealand; but I recollect seeing a native in the interior of the north Island with modified elephantiasis of the left leg. Inguinal hernia occurs, and proves occasionally fatal; I saw a strong young man die from strangulated hernia. Double inguinal or labial hernia has been seen in a female; and umbilical hernia is common among children, in consequence of the custom of cutting the cord too short, with the shell which they use for that purpose; it generally disappears after the first few years. I have heard of no bad result from it.

Cancer.—From very careful inquiries, I have not heard of a native woman dying from cancer or carcinoma of the breast. If the disease should occur, it must be extremely rare indeed. This remarkable peculiarity deserves particular attention; but the absence of the disease from among the New Zealanders is another link in the chain of evidence, that cancer is a disease of civilization. Sir Astley Cooper recommends a diet of animal food as a means of cure in cancer; but the absence of the disease among a people who live almost entirely on vegetables, would indicate a different opinion. As cancer is said to be rare among the inhabitants of Egypt and Algeria, a migration to these countries has been recommended to those suffering under the malady. The same may be said of New Zealand. But I have already said that, although the aborigines do not suffer from it, yet European women have had the disease commence in the country; and there are no European women sufficiently old, who have been born and brought up in New Zealand, so as to ascertain whether they are liable to the disease or not.

Stone in the Bladder.—No case of this disease has been seen, nor have I heard of one. As Professor Cooper has calculated that one case occurs annually in England for every hundred thousand souls, we might naturally expect, out of a population supposed to be nearly one hundred thousand, that ten years' constant intercourse would have brought one instance of stone under the notice of some of the Europeans living in the country, had the disease existed among the

New Zealanders. The vegetable diet, and the large quantity of pure water which the New Zealanders drink, tend to produce urine of a low specific gravity, and comparatively free from urid acid.

Bronchocele.—I heard of one supposed case of this disease, but on inquiry found it to be scrofulous tumor. There is in the north island of New Zealand, in which almost all the native population live, a large quantity of magnesian limestone, which cannot fail to impregnate the water passing through it; but I have visited villages in this part of the country, but never saw a case of bronchocele. This circumstance furnishes no argument against the theory of the magnesian origin of bronchocele, because the aborigines rarely use well water, and they are very particular that the river water they use is clear and tasteless. If, then, there is one thing more than another the New Zealanders are particular about, it is the purity of the water they drink. Thus, well water is rarely used, or a stream which runs through a wood, where decayed trees are likely to be found.

Hydrophobia has not been seen either among dogs, Europeans or natives. The absence of the disease in New Zealand is a link in the chain of evidence, that the malady has its origin in specific contagion. There are many dogs in the country, and some of them are very badly fed animals.

Tetanus.—I have not seen nor heard of either an idiopathic or symptomatic case of tetanus among the aborigines.

Diseases of Infancy.—A large number of children die under three years of age. The poor diet on which the mother lives produces thin and watery milk; sometimes the milk is scanty, and food is given to the child which it cannot digest. This produces bowel complaints and fever. Neglected catarrhal complaints from insufficient clothing often produce death. Dentition is occasionally accompanied with irritation and convulsions; the last complaint is not so common as among European children; croup proves fatal; worms are very frequent. Tabes mesenterica occurs, but the poor food infants have given to them lays the foundation of a delicate sickly life and a premature old age.

Diseases of the Organs of Menstruation.—As there are a large number of women in New Zealand barren, it may be supposed the menstrual discharge is often irregular or diseased. I have inquired into this subject, but it is a difficult question to arrive at the truth of, because the native women rarely consult Europeans about this class of diseases; from the inquiries I have made it appears that the

menses begin to flow at thirteen, fourteen, fifteen or sixteen. I have heard it stated they begin at ten years of age, but this is not usual. I never saw a New Zealand girl have a child who in appearance was not at least fifteen years of age. I have seen European mothers younger. Sexual intercourse takes place often before the menses appear. The menses are sometimes very irregular, one or two months often passing without a flow; women occasionally have headache a day or two before the usual period of the menses, but no uneasiness is felt after this. I have heard of some instances of menorrhagi; profuse menstruation occurs. From all inquiries, I am of opinion that the New Zealand women are subject to the same irregularities as women in England; but these irregularities are perhaps not so common, nor do they appear to have so much influence on the constitution. This opinion is founded, however, on no statistical data. Hysterics and chlorosis, the two maladies most influenced by the menses, are almost unknown. I have heard of a half-caste girl who had chlorosis. The sterility which the New Zealand women suffer from, is perhaps caused by too early and promiscuous sexual intercourse. I have been told that women have a way of rendering themselves barren by injuring the womb, but as my informant, one of the clergy of the Church Missionary Society, says it was never attended with loss of life, I am inclined to doubt it. Count Strezlectri in his "Physical History of New South Wales," published in 1845, states that when once a female of the aboriginal tribes of Australia has borne a child to a European or white, she ceases entirely to reproduce with males of her own race. I doubt the truth of this among the aborigines of Australia, and can deny its accuracy regarding New Zealand women, for I know several instances of New Zealand women having children with men of their own race, after having had children by Europeans.

Parturition is not attended with the same danger as among Europeans. Many missionaries and medical men never heard of a woman dying in childbed. A native chief aged about fifty, told me that out of a tribe numbering 4,000 souls, he could only recollect ten instances of women dying in childbed. This is about one death in three years out of 2,000 women. The circumstances which caused death, the chief said, were hæmorrhage and cross-births; one medical man was called to a woman with an arm presentation, and another to a protracted labor, the result of a deformed pelvis. Childbearing extends from fifteen to thirty-five years of age; but I have

heard of a woman whose age, from certain known circumstances, must have been forty-seven when she gave birth to a child.

New Zealand women often give birth to large families. Twins and triplets occur; but three children born at one time have never been reared. I knew a woman who had fifteen children, all dead. When a woman has a protracted labor, it is assisted by violent pressure on the abdomen. I saw a young female who was suffering from extensive ulceration of the muscles of the abdomen, which had come on after a protracted labor. It might have been produced by too violent pressure. Abortions occur, and are often caused and produced by pressure on the abdomen, or sitting over a native oven, such as will be afterwards described. I never heard of a woman with puerperal convulsions. Infanticide is generally perpetrated, the moment the child is born, by pressing the head between the thighs.

Child-bearing is usually easy with the New Zealanders. A New Zealand woman, the bearer of a burden, with a party of travelers, was confined on the road; after the birth of the child she walked four miles, and next day fifteen. They rise almost immediately after the expulsion of the after-birth. As soon as a New Zealand woman finds her labor about to commence, she takes a blanket and goes out into the open air, into a quiet retired place. If it is her first child, a woman attends her; after the first child they go out alone. After delivery, the woman proceeds to a stream and washes herself and her infant, and then returns home. During labor, the women kneel down, with their thighs apart, and having their hands resting on a tree or stick. They hold their breath. Labor seldom exceeds two hours; generally it is much shorter. Sickness after parturition is rare. The great ease of child-birth may be partly due to the pyramidal shape of the skull. Prolapsus uteri after child-birth is rare. In a large village, containing four hundred women, there was only one woman who had this disease.

Epidemic Diseases.—According to all accounts, there have prevailed during the last sixty or seventy years, three fatal epidemics; one called Maripa, or makoko, broke out after the arrival of a European vessel in Mercury Bay, sixty years ago, and proved fatal to a great many persons. It had a dysenteric character, and caused death after a few days' illness. About five years after this, another pestilence broke out, called rewarewa, and so many died that the living could not bury the dead. It commenced among the natives in the

north part of the island, and had a dysenteric character. Tangara is the name of a pestilence which visited the island, and carried off great numbers, the nature of which I cannot ascertain. Since the settlement of the British Government in New Zealand, in 1840, there have been three epidemics—influenza, whooping-cough, and mumps. The first has been prevalent twice, and whole villages were prostrated by it. Whooping-cough and mumps are said to be new diseases; the former prevailed as an epidemic in 1847, the latter in 1851.

On the method in which Diseases were treated by the New Zealanders.—The instinct to live, which is so strong in the human breast, has made men, in all ages, endeavor to procure means to ward off death. Among the New Zealanders, the desire to live was as strong as among other races of men; yet the idea which existed in their minds, that all diseases are inflicted, directly or indirectly, by the gods for their sins, or by witchcraft, made them resort to prayers in place of physic for a restoration to health. I insert four out of the many prayers which were used for the treatment of disease, so as to convey some idea of their nature and style :*

He Kopito.—Kopu nui, kopu roa, kopu takitaki, kopu whakaahu tena te ara te hamama na kawea kowhitia, pararitia, pupa, nau mai ki waho.

Translation of the above Prayer for Swollen Stomach.—Big belly, long belly, stretched belly, bursting belly ; there is the passage open, take it hence, pluck it out.

He Korere.—Titi puru e, titi puru e, titi kohea, titi maiami, e tena te titi ka titi, tena te puru ka puru, ko te puru ra tena, i purua ai te tupuna a Houtaiki.

Translation of the Prayer for Looseness of the Bowels.—Stop up the looseness, stop up the looseness, the purging will subside, the purging be stayed : there is the purging and there is the stopping up, for this is the remedy that stayed the malady of thy ancestor Houtaiki.

He Manawa.—Kei te manawa, kei taku kei taku manawa kei te manawa whena, he manawa kaukau. Tina ki roto whakataka atu ki roto.

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*I am indebted for these prayers, and for their translations, to Mr. C. O. Davis, of Auckland, one of the few persons in New Zealand intimately acquainted with the language and modes of thinking of the New Zealanders. The translations are literal, but it is a difficult subject, for few of the present generation of Maoris are acquainted with these prayers, or even the exact meaning of the words, and the difficulty is increased by the circumstance that many words have five or six meanings.

Translation of the above Prayer for Disease of the Heart, or Shortness of Breath.—It is in my heart, on it is my breath, and in thy breath it is in thy heart, and my heart, in the heart that is strenuous. Let it be overpowered inside, let it be strenuous inside,† let it be thrust back inside.

He Hono.—Tutakina i ou iwi, tutakina i ou toto, tutakina i ou mongameya tena terangi, ka tutaki, tena te papa ka whena.

Translation of the above Prayer for a Sprained Back.—Close up your bones, close up your blood, close up your marrow, and be united as the heavens, and let the bones be strong as the earth.

Confidence was not, however, placed in such stupid compositions as the above, the exhibition of substances to cure diseases were occasionally resorted to; but the exact value of prayers and medicine will be at once appreciated when I state, that medicine, without the assistance of prayers to the gods, was totally inefficacious. Now Zealanders have no idea of the circulation of the blood, nor any of the proper functions of the different organs of the body. The head, although extremely sacred, is not supposed to contain the organ which produces the intellect. The stomach and bowels are believed to be the seat of some of the faculties of the mind, such as joy, fear, and sorrow. Every external part of the body has a name, and a good many of the internal parts. Their cannibal feasts gave them an opportunity of acquiring anatomical knowledge.

The New Zealand mode of treating surgical cases was often successful and judicious. For a broken bone, splints were made, from the bark of trees, in the shape of the part, and bandages were made from the flax plant. Dislocations were reduced. Sprains were treated with rest and shampooing. They never performed amputation. Scraped roots and leaves were applied hot for boils and sores. Abscesses and boils were opened, often long before they were ripe, and severe pressure applied to squeeze out the matter. The surgical instruments employed for opening abscesses were the sharp edge of a shell, a splinter of obsidean, or a sharp-pointed stick, or a thorn. If a person received a wound, it was first washed, and then a plaster of mud applied to exclude the air, and this was allowed to remain until the wound was well; sometimes the wound, if small, was

† This most probably refers to the god who is supposed to be in the heart of the sufferer.

bruised with a stone, to excite bleeding, and afterwards held over the smoke of a fire of certain plants. The bleeding from a wound is sometimes checked by holding it over the smoke of a fire. For cutaneous diseases and sores, bathing in the hot sulphur and siliceous springs at Roturua Taupo, and at several other places, is reckoned very beneficial. For rheumatism, scarifications were made in the skin, or friction and shampooing with the fat of pigeons and whale oil, were used. In lumbago, stones were heated and rolled over the part. Change from one part of the country to another was an esteemed remedy for certain diseases, not for the climate, but to avoid the evil spirits which produced the sickness. Blistering a part was known, and it was done by the application of the leaves of certain plants—e. g., clematis. Local bleeding by scarifying the skin was known, but not venesection. Hæmorrhage from a wound was checked by bandages, and stuffing the wound with mud. Diseases which were particularly supposed to be caused from the devil, or an atua, living in the body, were occasionally starved out, *alias* the patient killed; at other times they were pressed out. Mr. Nicholas, a settler in the Thames, told me that, 1848, he saw a person killed by an attempt to drive out the atua. A young, healthy New Zealander had a pain in his stomach; he was laid out naked on the ground, heavy baskets of stones were placed on his chest and stomach, on the top of which several persons sat for about a quarter of an hour; when they were removed the unfortunate man was dead—from suffocation, I presume, in consequence of the movements of the lungs being impeded. The evil spirit, in this case, was effectually expelled, but with it went the vital spark.

Vapor and hot-water baths were often used in the treatment of diseases. The vapor bath is made by digging a hole in the ground about two feet deep, and as large as is required; into this a number of very hot stones, about the size of a large orange, are put, a quantity of water is sprinkled over the stones, and over them a thick bed of the leaves of the plants which are supposed to be efficacious in the cure of the disease are spread. The patient either lies down on them, or sits on them. In the former case, the body is covered with a mat and a layer of earth; in the latter with a mat or blanket. The steam generated by the water on the hot stones rises through the leaves, envelopes the body, and produces a copious prespiration. This bath is often given; sometimes the patients are kept in it from sunrise to sunset, but generally for two or three hours. Vapor

baths are constructed at Roturua over some of the hot rocks found in this volcanic district.

Mode of Making the Hot-Water Bath.—This was not so often used. Captain Cook was wrong when he said the New Zealanders were ignorant of any way of boiling water; they have a highly ingenious way, which they used in giving hot baths. It is of heating stones very hot, and throwing them into cold water contained in a large wooden bowl. The water soon boils, and the heat is kept up by throwing in fresh hot stones. During the heating of the water, certain trees and barks are put into it, which they impregnate with their properties. It is a medicated hot-water bath, and is chiefly used for cutaneous diseases.

Mode of Recovering Persons who have been long under Water.—The body, immediately after being taken out of the water, is suspended, head downwards, over the smoke of a fire; if there is any life in the person, the smoke produces irritation in the nostrils, and sneezing. After this effect is produced, the body is put before a fire, and hot water poured down the throat.

Nominal List of Plants used as Medicine by the New Zealanders, and the Diseases for which they are supposed to be beneficial.—The expressed juice of the Mesembryanthemum (pig's ear,) Nat. Ord. Ficoideæ, is used for boils. The leaf and root of the native flax, Phormium tenax, Ord. Asphodelæ, is used for ringworm, bandages, and various internal complaints. The bruised leaves steeped in water of a pepper-shrub, called Horopito, Drimys auxillares, Ord. Magnoliaceæ, is used as a remedy for cutaneous disease. The leaf of the Kahikatoa tree, Dacrydium excelsum, Ord. Coniferæ, is used in the form of decoction for urinary and other internal complaints, and in the steam bath. A decoction of the Kareao, Ord. Lorantheæ, is used for secondary symptoms, and to produce abortion; the young shoot is eaten to cure the itch; The leaf and bark of the Kawakawa, Piper excelsus, Ord. Piperaceæ, is used for cuts, wounds, cutaneous disorders, gonorrhœa, and in making vapour baths. A weak infusion of the Kohekohe, Hartighsia spectabiles, Ord. Meleaceæ, is used to stop the secretion of milk. Mosses found on trees, when dried and reduced to powder, are rubbed into the skin for cutaneous diseases. The Kokowai (red ochre) is used for sore heads and wounds. The leaves of the Kopakopa, something like the plantain, are used to bandage over ulcers; one side of the leaf draws and the other heals. The tender leaves of the Koromiko, Veronica segustrifolia, Ord.

Scrophalerineæ, are bruised and applied as a poultice for ulcers, and especially venereal ulcers. The inner bark of the Kowai tree, Edwardsia microphylla, Ord. Leguminosæ, is used for itch. The bruised pith of the Mamaku, Cyathea medullara, Ord. Filicies, is used as a poultice for swollen feet and sore eyes. The infusion of the bark of the Miro, Podocarpus ferruginea, Ord. Coniferæ, is drunk for pain in the stomach. An infusion of the root Mouku, a fern, is used as a wash for cutaneous complaints. The bark of the Ngaio tree, Myoporum læteum, Ord. Mysporinea, is applied to ulcers and cutaneous eruptions. Charcoal from any wood was used in a state of powder for cutaneous eruptions. The pith of the Ponga, Cyathea medullara, Ord. Filicies, was used as a poultice for cutaneous eruptions. The inner bark of the Poropora, Solanum lacineatum, Ord. Solanea, is used for the itch. The bark of the Pukatea, Laurelia Novæ Zelandiæ, Ord. Atherospermeæ, and the bark of the Rata, Metrosideros robusta, Ord. Myrtaceæ, are used for cutaneous diseases. The infused bark of the Rimu, Dacrydium Cupressinum, Ord. Coniferæ, is employed to dry up ulcers, and for wounds of all sorts. The water in which potatoes are boiled is used as a lotion for cutaneous diseases. The boiled blood from the ear of a dog is used as a remedy for spear-wounds. A decoction of the Ti, Cordyline Australes, Ord. Asphodelæ, is used for dysentery. The leaf, tender shoot, or pith of the Tutu, Coriariea Sarmentosa, Ord. Coriarieæ, is used for dysentery; it is very poisonous to animals and men; when a man has eaten the seeds and stalks of the tutu, and shows signs of poison, he is put under water for nearly half a minute; his stomach is by this means filled with water; he is then taken out and rolled on the ground, until he vomits. The expressed juice from the seeds of the tutu is a favourite drink of the New Zealanders; it is not poisonous, and is very pleasant. The juice of the leaf of the Puatanatana is used as a blister.

There are several other plants used by the natives to cure diseases. Different parts of the country use different substances. None of them are very active. Neither purgatives nor emetics are much used. A large portion of the remedies are to cure cutaneous diseases, a very significant proof of their great frequency. There are few remedies for pectoral diseases, or indeed any internal or obscure malady. Much of the above information relative to the plants used in medicine is procured from the Rev. Mr. Taylor's "Leaf from the Natural History of New Zealand." The natural orders given, I

have arranged from a French work, entitled "Choix de Plantes de la Nouvelle Zealande Recueillies et Decribes, par M. E. Raoul, Chirurgien de premiére classe de la Marine Royal, 1846."

Their Physicians.—From the New Zealanders' ideas about the pathology of diseases, the priests were their only useful medical men. When called to a sick person, the first thing done was to consult the gods as to the termination of the malady; there were several ways of doing this, but the most common was to pluck up a piece of fern, if the root came up clean and free from earth, a favourable prognosis was given; if, on the other hand, much earth adhered to the root, an opposite opinion was given. The sick were conveyed into the bush away from the village, and a small place built for them, and the place was tapued—when a sick person recovered, fern root or some other food was cooked, and a portion was set apart for the gods—the tapu was then removed. When a person was bewitched, the priests were summoned to drive the witch away; the incantations of the priests in such cases were generally performed near water, where they professed to see the spirit depart. In some cases the witch was transferred from one person to another. I have seen a woman have nothing the matter with her, almost die from the belief in witchcraft; she rapidly recovered on a priest visiting her, and repeating a short prayer. The tapuing of the sick, and their removal from among the healthy, is merely an extension of our laws for the prevention of contagious disease.

PART THIRD.

BIBLIOGRAPHICAL NOTICES AND REVIEWS.

American Medical Association.—Eighth Annual Meeting.

About the time that our May No. made its appearance this body commenced its session in Philadelphia.

The number of delegates in attendance was 510—more than have ever been present at any former meeting.

The States represented were Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, Alabama, Tennessee, Kentucky, Ohio, Indiana, Illinois, Michigan, Iowa, Wisconsin, Missouri. From the District of Columbia there were also delegates; also from the U. States Army, U. States Navy and the Parisian Society.

On the morning of Tuesday, May 1st, the Association was called to order, and Dr. C. A. Pope of St. Louis, the President, delivered his annual address, as follows:

Gentlemen:—With feelings of grateful pleasure, I meet you, and greet you, on this occassion.

For high and useful purposes, have we assembled from the wide extent of our beloved country. The elevation of a noble profession—the promotion of science—the good of humanity—these have been, are, and will continue to be, the objects of our Association. Whether we have, thus far, done much or little, our sole aim has been the advancement of the best interests of our fellow men. I shall not assert that we have done as much as we might have done, or that the course hitherto pursued by us, is so perfect, as to admit of no improvement. Were such the fact, and were the Association a firmly established institution, I might have experienced more hesitation in the selection of a theme for the present occasion. And since we cannot, as yet, I think, urge such a claim, the few suggestions which I shall offer, are made with becoming diffidence, but at the same time with a deep sense of their importance to the welfare and perpetuity of our Association.

Some strictures on our proceedings, in medical and other journals, have appeared within the last year, as well as in previous years. I shall not here blame the authors of them. They are, doubtless, as proud of our noble profession as we, and equally with us, anxious for the advancement of its interests and its honor. I thank them for their suggestions. All of us are ready to hear them and to profit by them. If any more effectual mode of arriving at truth can be devised, than that which we have heretofore pursue, all of us are ready to follow it, and would rather thank than quarrel with those who may propose it.

Physicians have an almost superhuman mission to fulfil. The goal of their ambition, and their hopes and their duty, stands at the *ultima thule* of human capacity—nay, rather beyond it. It cannot, indeed, be said, that their duties are beyond their powers, but their ambition, their hopes, their wishes certainly are. They would gladly know, not only all the secrets of organization, but those also of physiology, pathology, and therapeutics. To arrive at such knowledge, is, perhaps, beyond the attainment of the human mind. Multiform are the elements which enter into the problem of health

and disease. Health is, itself, a constant change of composition—diseases are ever-varying changes, supervening on this.

Do we know, with all our advancement, and after all the toil of our predecessors for two thousand years, the exact changes in which any disease, the fevers for instance, consists? And even when we shall have learned these, so as to understand them as well as the most ordinary chemical changes, the ever-varying character of most diseases, and the inward disturbing influences upon them, of the mental and moral emotions, would require to follow them, a continued stretch and power of intellect, of which it is doubtful if man be capable. This exactness of knowledge is not, I grant, necessary to the very successful practice of medicine. Our profession can render great and important services to man without it, but with it, it would be still more serviceable. To it our ambition tends. To this perfect knowledge we aspire. Although we may never reach, we can yet eternally approach it. In the vast region of our researches, there is no probability that human genius will ever, Alexander like, weep for the want of unconquered provinces. Beyond the conquests of the future heroes of the profession, there will always be a boundless field for the ambitious and philanthropic explorer. In the language of a western student, "the science of medicine, like the liver of Prometheus, is sufficient to glut the eagles of all time."

The object of this Association is to do something to advance the profession towards the far-distant goal of perfection—to aid the solution of some of the problems and enigmas of life and organization—to add some material to the growing temple, whose foundations were so firmly laid by the Coan sage—and to do its part as best it may, in the cause of humanity. Nor do I think, that so far, it has altogether failed. Many valuable contributions to science have been elicited—professional ambition has been stimulated—an *esprit-de-corps* has been successfully evoked and established. The strength of the profession has acquired additional power by the union of its members. This Association has been to physicians, what the railroad and electric wires are to commerce, and the interchange of useful knowledge to States and nations. It has made us one, and as I have just remarked, in unity there is power. This Association has stimulated thought. Chaotic and void, would forever remain the masses of facts, accumulated by the observations of ages, but for the co-ordinating and logical power of reason. It sits in judgment on the silent phenomena, as a "refiner of fire, and a purifier of silver." It forces the voiceless facts to mount the tripod of the oracle, and speak forth words of wisdom. The scalpel, the crucible, the microscope, may be subsidiary to its purposes and ends, but they cannot supply its place. Fixed and patient thought, in medicine, as in the other departments of science, is the Aladdin's lamp, that lights the footsteps of the discoverer. To stimulate attention and thought, is to accelerate many a new discovery—to hasten the advent and establishment of important principles yet in the womb of the future. May not our Association do this more effectually than it has hitherto done?

Let all the contributions be read and attentively considered. Such a course would certainly be more encouraging, as well as more respectful to their authors. Let the reports be deliberately and fully discussed, and let them go forth to the world with the sanction or criticism of the Association. This would require time, it is true, but if we have time to meet at all, surely a few days would make but little difference. The good that would be effected would yield a tenfold compensation for the time employed. Every one must admit that three or four days is too short a time for the Association rightly to fulfil its annual mission.

I would, moreover, respectfully suggest that time be taken for the discussion of some of the leading topics of medical philosophy. Amongst these, may be mentioned the nature, causes and treatment of cholera, yellow fever, *et cetera*—hygiene, and the laws of health affecting masses of men—quarantine—the cases of mortality among children—the chemical and vital doctrines of life. Questions like these, indicated a year in advance for discussion, would excite a carefulness of investigation, and a degree of attention and thought which could not fail to clear away much of the darkness and doubt in which they are yet shrouded. Nothing so sharpens the intellectual powers as public debate. It fixes attention, and strains to the utmost every faculty. I have no hesitation in saying that facts enough have been accumulated to establish great and general principles of which the medical world is yet in ignorance or doubt. Nothing would contribute more to demonstrate these principles than the collision of matured intellects in public debate. What a mass of facts, and argument, and demonstration, would be brought to bear on any of the subjects alluded to, if some of the best minds in the profession were to debate them, after a year's preparation! Observed facts are the crude materials of science—the intellect is the master builder of its august temple.

I make these suggestions for your consideration. All the scientific meetings in this country and in Europe, employ more time than ours has hitherto employed. Evidently we must protract our sessions, if we would render them as serviceable to science as they may be. No member of the Association will be required to remain longer than suits his wishes or convenience. Some fifty or sixty, more or less, would always be found to listen with eagerness to scientific papers, and engage with pleasure in scientific discussions.

The time has probably arrived, for a change in our plan of organization, which will admit of the selection of a permanent place for the future meetings of the Association. There are evident advantages incident to both the migratory and stationary plans. These might, perhaps, be easily reconciled and secured. A proposition if I mistake not, was made some years ago, by the Smithsonian Institution, and I would respectfully suggest, whether it would not be in accordance with the best interests of the Association, to hold biennial meetings in Washington, and the alternate ones, as now, at different points of our common country. We might thus secure all the advantages of a fixed abode, in the way of pre-

serving the archives, making collections, etc., whilst by meeting in various localities, we could not fail to excite that wide-spread interest among the profession, and obtain such accessions of new members as would greatly enhance the high and useful objects of our Association. Should this proposal meet with your approbation, I would further intimate that policy would perhaps require the meetings of the Association at the National Capital, to be held in the years of the short sessions of Congress.

I shall say but little of the legislative duties of the Association. I shall say nothing of the propriety or impropriety of getting laws passed to regulate the practice of medicine, and furnish standards for candidates for the Doctorate. Perhaps the Association can do but little in this respect. Ours is a popular government, and the people are disposed to allow the largest freedom in everything pertaining to medicine, medical schools, and physicians. Laws passed against quackery one year, are revoked the next. Our country is the paradise of quacks. All good things have their attendant evils, and this unbridled liberty is one of the evils of popular government. May we not hope, however, that even this evil may disappear, as general education and the cultivation of the masses advance? At any rate the people are not yet disposed to put down the quacks, nor to require too high a degree of qualification for those of the regular profession. After all, laws can make only mediocre physicians. They can require the candidates to know only so much—to be qualified to a certain degree; and this degree will always be far lower than that to which the true lovers of knowledge would attain, without any legislation on the subject. The greater lights of the profession cannot be manufactured after any process of legislative enactment. Thirst of knowledge, self-love, philanthropy, burning ambition—these make the great physician and surgeon. These have made all the worthies of the past—not legislation. Legislation cannot drive the drone to the proud heights of professional eminence. When these heights are reached, it will be seen that the successful aspirant has been stimulated by a stronger power.

To him the laurel blossoms of renown and the life-giving mission of his art, are dearer and more attractive than was the mystic bough of the sibyl to the eager Æneas, or, than the golden apples, guarded by sleepless dragons, to the Hesperian daughters.

Whatever course you may think proper to pursue, I am sure that your objects will be, the advancement of science—the good of mankind—the honor and glory of the profession. We have the dignity and character of a noble calling to sustain—of a profession which has numbered, for two thousand years and more, some of the wisest and best men in all countries and all times. It is no trival matter to sustain the rank and respectability of a vocation which can boast of a Hippocrates, a Harvey, a Hunter, of the most erudite and benificent of sages and philanthropists the world ever saw—of a profession which has furnished to every nation its *clarum et venerabile nomen.*

On the eve of the battle of the pyramids, Napoleon exclaimed, Soldiers! from the height of yon monuments, forty centuries look down upon you. Gentlemen, from the heights of past ages, countless worthies of our God-like profession point and beckon to a goal more elevated than that which attracts legislators and conquerors, Solons and Cæsars.

We did not arrive in time to hear the address. Those who did hear it delivered, spoke well of the *manner* of the young Missourian. The *matter* is very good. It shows that the author is capable of looking over the whole ground, estimating properly what has been done and what there is still to do in order to give the profession the greatest possible degree of usefulness and certainty in its results.

The following are the officers for the present year:

President—Geo. B. Wood, of Pennsylvania.

Vice Presidents—Wm. M. Boling, of Alabama; Daniel Tilden, of Ohio; D. Humphry Storer, of Massachusetts; Grafton Tyler, of the District of Columbia.

Secretaries—Francis West, of Pennsylvania; Wm. Brodie, of Michigan.

Treasurer—Caspar Wister, of Pennsylvania.

Committee on Publications—Francis G. Smith, of Pennsylvania, Chairman; Francis West, of do.; R. C. Foster, of Tenn.; Samuel L. Hollingsworth, of Pennsylvania; H. S. Askew, of Delaware; Samuel Lewis, of Pennsylvania.

Ohio had 26 Delegates, as follows: Levi. D. Scheetz, J. C. Williams, R. Hills, R. B. Leonard, J. F. Potter, E. Gaston, R. R. McIlvaine, C. D. Cotton, A. Cary, A. Dunlap, R. D. Mussey, Daniel Tilden, T. W. McArthur, A. M. Johnson, Wm. Clendenin, T. H. Baker, W. S. Battle, A. Evans, C. G. Comegys, Thos. Wood, S. M. Smith, Jno. Dawson, J. P. Walker, O. D. Norton, Jno. F. Holston, Caleb Jones—26.

On the 2d the Association took a recess for the purposes of visiting Independence Hall. A number of ladies were present, and the Hall was crowded to its utmost extent.

Dr. Isaac Hays, of Philadelphia, on behalf of the Association, introduced the members as follows:

ADDRESS OF DR. ISAAC HAYS.

Mr. Mayor:—

I have the gratification of introducing to your Honor the Members of the American Medical Association—our National Medical Congress. This Association was organized, in our city, eight years

ago, and has met annually since in one of the principal cities of the Union. It is composed of delegates from the Medical Societies and Colleges, Hospitals and other Medical Institutions throughout our country. It was instituted with no selfish views, but to accomplish objects of the greatest importance to the public at large ; to improve the healing art, and increase its powers for alleviating human suffering. It strives to attain these ends by securing more complete and thorough courses of instruction to students, and by raising the standard of requirements of those admitted into the ranks of the profession;—by investigating the causes of the diseases which prevail in certain localities, and by seeking the way by which these causes may be removed, or their effects counteracted;—by collecting reliable histories of the different epidemics which, from time to time, spread over our country, and by endeavoring to discover the means of arresting their progress;—by offering prizes for the most useful discoveries and improvements in medicine ; and by promoting every measure tending to enlarge the boundaries of our science or increase the efficiency, and augment the usefulness of our art.

In pursuance of these objects, the Association has assembled this year in your city, and we feel deeply grateful to you for your courtesy in inviting us to visit this place, so venerated by every American heart.

The philanthropy of our profession is not restricted to the cure of disease—it has a larger range ; it embraces within its scope whatever tends to the improvement of our mental or moral condition, or even to confer "the greatest good upon the greatest number." Hence the profession have never been indifferent to national objects ;—on the contrary, they flatter themselves that they have not been behind any other class of the community in patriotism, but that they have been always prompt to serve their country, not only in their professional capacity, but also by their counsel in the Cabinet, and even by taking up arms for her defence in the field.

I need not remind your Honor that the most illustrious physician of his day, in this country, the late Dr. Rush, was a member of the Congress of '76, and affixed his name to the Declaration of Independence; or that General Joseph Warren, one of the most eminent physicians of Boston, contributed by his eloquence to rouse his townsmen to resist the oppressive acts of the mother country, and shed his life's blood on Bunker Hill in defence of liberty,—or that his younger brother, Dr. John Warren, animated by the same spirit, volunteered as a private soldier; nor need I refer you to other examples of a similar character. But I *may* assure you that the spirit which animated our ancestors, if it appear dormant, is not extinct in our bosoms, and that while standing on this spot—sacred to human liberty—we experience emotions kindred to those which the inspired Lawgiver must have felt when he heard the voice calling to him out of the midst of the burning bush : "Put off thy shoes from off thy feet, for the place whereon thou standest is holy ground."

REPLY OF MAYOR CONRAD.

MR. CHAIRMAN OF THE COMMITTEE OF ARRANGEMENT:—

I thank you in the name of the community which I have the honor to represent, for your eloquent introduction of our friends to the authorities of the city, and to this the Hall of Independence.

GENTLEMEN OF THE AMERICAN MEDICAL ASSOCIATION:—

I am proud of the privilege of extending to you, in the name of the government and of the people of Philadelphia, a most cordial welcome.

I bid you welcome to our city—a city which, deriving a cherished distinction from the profession which you adorn, is eager, now and ever, to requite it, in her tribute of respect for the professors. I welcome you to our people, whose intercourse, for many a year, with you or your brethren, has inspired a feeling which, reserved as we are sometimes said to be, will, I doubt not, burst into earnest and unambiguous expression, before you leave us.

I welcome you, gentlemen, to this Hall, but not as strangers or the sons of strangers—for it is your own. As the temple and territory of Delphos, in the wildest domestic perturbations of Greece, afforded one sacred area over which the cloud of discord never gathered, one altar whose worship was never invaded, this spot, consecrated to our common American glory, knows no lines of latitude, and belongs, in truth, no more to us, whose peculiar privilege it is to inherit its guardianship, than to our brothers—*to you*. In coming hither, therefore, you *come home*. These precincts have been hallowed for all time, by the heroic virtues of your and our fathers. This is the fountain from which the living waters of American liberty were first drawn, and it is therefore most sacred—(wo to the generation in which it ceases to be sacred!)—but, like the well of the Patriarch, all the tribes of Liberty's Israel own here an equal right, and owe here an equal homage.

In no sense, then, can I greet you as strangers—for yours are names familiar to every American proud of the science of his country; and those who are united, by this association, in a cause so lofty as that eloquently characterized by your Chairman, may not only claim the universal and acknowledged privileges of the Republic of minds, but the rights of a nearer and a dearer charter, the Brotherhood of benificence—the kindred claims of noble hearts, knit in the highest and holiest of human aspirations. In this spirit, with the most fervent and fraternal sentiments of respect and regard, I greet and welcome you.

You are right, Mr. Chairman, in claiming, amid the associations which hallow these precincts, a peculiar privilege for your profession—a profession which not only sprinkled, with the earliest sacrificial blood of the Revolution, the highest altar upon which Valour vowed and dedicated our country to freedom—I refer, as you have referred, to Dr. Warren and Bunker Hill—but which, in every struggle for the enlargement and enlightenment of human destinies,

has been eminently distinguished for courage, zeal, and fidelity to the rights of man. You have, therefore, a peculiar right to claim kindred here, and have that claim allowed; and within these walls, which witnessed the zeal of Rush, it would be a treason to virtue to forget, that one of the lights of your profession shed glory upon the solemn debates of this hall, and was foremost amongst those that bade yonder bell* (preserved and devoted to the veneration of posterity,) with its iron tongue, to *proclaim liberty throughout all the land, to all the inhabitants thereof.*

It is the glorious peculiarity of your profession that, while Ambition, in its ordinary and most applauded paths, plays the part of the *Destroyer*, and wins glory at the expense of human life and happiness, you and yours, with a more exalted civilization, a nobler heroism, have ever *sought to save.* Next to the highest of all human courage—if, indeed, it be merely *human*—that of the martyrs of religious Truth—the courage of the physician, whether on the battle-field or in the lazar-house, the courage of science and humanity, is most sublime, and best entitled to the *clarum et venerabile nomen.* The vulgar courage of the warrior, under the base stimulus of passion, or the low greed of applause, can hardly be compared to the noble intrepidity of the surgeon, who gleans, in the ruthless and red-handed reaper's path, the leavings of the battle; and still less with the hero of the hospital, who encounters the grim antagonist in the horrid silence and gloom of the pestilence. Imagination can hardly embody an instance of human courage and virtue more sublime and unearthly than that of the physician, who, in the midnight of a plague-stricken city, thrids the fetid solitudes of its alleys, and, entering the devoted hovel of the wretched, ministers—while only Pestilence and Misery, Death and God look on—to the perishing. I need not step from this spot to grasp the hand of many a hero who claims no laurel—many a noble philanthropist whose sacred labors, in scenes like these, have been unmarked, save by the Eye that never slumbers, and remembered only by Him who alone can reward.

To such a profession, one venerable from its antiquity, noble from the grandeur of its objects, illustrious from its achievements, and which demands every aid and energy of genius and science, of head and heart, that dignifies the race, it is not strange that, go where it may, a ready homage greets and a ready blessing attends it. In our own city, all that is noble in patriotism, all that is exalted in science, all that is bright and beautiful in the arts which refine society, all that is lovely and cherished and holy in private life, combine to render the profession sacred and dear to us.

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* *The Liberty Bell.*—This is the bell which was rejoicingly rung, from the steeple of the old State House, when the Declaration of Independence was originally read in July, 1776, to the thousands assembled in the State House yard, now Independence Square. Upon this bell—cast long before the Revolution, and brought from England in the colony times—are the prophetic words of Scripture quoted—"Proclaim liberty throughout the all land, to all the inhabitants thereof."

There are few living to whom some one death in the past is not the sole event and solitary memory of the survivor's life—to him a lonely pyramid in the melancholy desert; and to such a mind and memory, *the debt of the death-bed*, where science, rendered holy by its office, ministered, though never paid, is never repudiated. I never knew a good man, still less a good woman, who had not such a debt—a debt which bankrupt gratitude cherished with its holiest affections and sanctified with its devoutest memories.

In these times, when the omnipotence of associated effort is invoked for so much that is of dubious merit, it is a gratifying spectacle to behold the enlightened professors of the most exalted of all arts—men sage and grave, unselfish and unaspiring—forsaking the homes to which they are bound by the affections and the afflictions of thousands, by wealth, and fame, and influence, to wander, wearily, away upon a pilgrimage of hundreds of leagues, in the cause and interests of the human family, its security, health, and happiness. For more than ten years, the representatives of your profession have thus gathered in Convention. What other body of our citizens have made a like effort—a like sacrifice? Selected from the most eminent of the profession, the delegates have been men whose years, like their virtues, were many. How difficult must have been, to them, the effort to burst through the bonds of a relying and clinging practice! They have already visited, in this duty, the cities of every section of our wide country. How many have fallen by the wayside? How many martyrs could you not thus number in this cause? How many of the good and great of the profession have, in these benevolent pilgrimages, joined the ranks of the thousands who have sacrificed themselves, at the requisitions of duty, as recognized and enforced by your self-imposed laws—joining the dead in the effort to aid the living? The epitaph of the Spartans at Thermopylæ might well commemorate the virtues and the fate of these martyrs. But if the cost has been great, the results have been commensurate.

Of the professional advantages attained, though I know them to be invaluable, I will not presume to speak; but I may be permitted to state, as health is the most important subject of municipal provision and care, that the transactions of the Association, which I have examined with great interest, comprise much that merits the attention, and will reward the respectful consideration, of the municipal governments of the Union.

It is natural that Philadelphia should feel, as she does feel, a profound interest in the cause of medical education in this country. She cannot, of course, forget that it was here that the first medical college was established in this country; that its merits and success extorted a reluctant transatlantic tribute of admiration; and that, progressing rapidly, but wisely, it achieved and maintained an equality with the most celebrated institutions of the Old World. As the cause of medical education has expanded, and institutions worthy of the cause and the country have sprung up, each triumph, thus attained, has been regarded here as the successful outbursting of an

offshoot from the primary effort; and Philadelphia, while rejoicing in the expansion and elevation of medical education throughout the land, has almost fancied—so earnest is her interest in medical education—that she had a right to indulge a *parental* pride in all that advances that interest.

These genial feelings have been maintained, in all their early and fervid freshness, by constant intercourse with all sections of the country. The ingenuous and gallant youths that have come hither for medical instruction have, in their unstudied intercourse, exhibited the character of their respective States in a light so generous and exalted as to win our affections, not only for themselves, but for the communities and States which could exult in them as their own. Winter after winter, we have had many of these noble young spirits among us. And let me remark that, rigorous as I am said to be in the administration of the law, I have yet to know the first occasion to rebuke, much less to punish a medical student. We have found them as gentle and decorous in their deportment, as they are exalted in their aspirations; and had Philadelphia—eminently catholic in her affection for her sister communities—needed a lesson of love and loyalty, these high-hearted missionaries would have taught it. This interchange of sympathies has endured for the third of a century—may it last forever! The youths—youths no longer—who formerly bore those sentiments to the remote sections of our republic, stand before me now as the revered sages and ornaments of their profession, meeting here the evidences of a reputation which had preceded them, and has long been cherished by us. And who can tell what have been the results of this kindly interchange of kindly feelings? It has doubtless been felt in every commercial, social, and political relation of life, correcting the prejudices, harmonizing the discords, and subduing the dangers of our common country.

We realize these facts. We recognize, in the members of an enlightened profession like yours, so many patriots and philanthropists, engaged in the great and general interests of the human race; and, apart from the mere scientific acquisitions of your annual meetings, we perceive in them results auspicious to all that we cherish, all that is kindly, forbearing, and conservative, between man and man, party and party, State and State, section and section; and, so regarding them, we hail and greet you with a welcome as sincere and cordial as the heart can conceive, or the tongue can utter.

These addresses are very creditable to their authors. Mayor Conrad's shows that the profession of Medicine is most appreciated where best known. Philadelphia has enjoyed in an eminent degree, the opportunity to become acquainted with men and things medical, and we see in the address of the Mayor, how her citizens have been impressed. Notwithstanding the reverses temporary, that as a profession, we have from time to time sustained, on account of the thousand and one forms of empiricism, the ultimate result of public feeling must be such as that exhibited at Philadelphia.

At the meeting of the State Society of Ohio, for 1854, a resolution was passed in regard to the patenting of Medical and Surgical Instruments, that conflicted with the National Code of Ethics. Dr. Clendenin, of Cincinnati, brought the matter before the Association, by offering the following resolutions:

Resolved, That no State or local Society shall be hereafter entitled to representation in this Association that has not adopted its Code of Ethics.

Resolved, That no State or local Society that has intentionally violated, or discarded any article or clause in the Code of Ethics, shall longer be entitled to representation in this body.

A motion to lay the above on the table was lost.

Dr. Miltenberger, of Baltimore, offered an amendment, which was amended by Dr. J. L. Atlee to read as follows:—

Whereas, It has been brought before the notice of the American Medical Assocation that the State Medical Society of Ohio has violated, at their last meeting, Sec. 4th, Art. 1st, Chapter 2d, of its Code of Ethics; therefore be it

Resolved, That the Secretary of the Association be directed to inform the officers of that Society, that unless such action be rescinded, they cannot be hereafter represented in this Association.

These were added to the resolutions of Dr. Clendenin, and adopted unanimously; the delegates of the Society in question, being forward in support of them.

We happened to be present when these resolutions were offered, and took the liberty to state that we regretted very much to see the Association troubled with the necessity of calling the State we had the honor in part to represent, to an account for such conduct, but that inasmuch as the matter had been brought forward, and that too by a delegate from Ohio, we wished to see the Association act promptly upon the subject—pass the resolutions that were before it. We further stated that the resolution passed by the State Society of Ohio, violating the National Code of Ethics, did not express, in our humble opinion, the sentiments of a majority of the members thereof, nor the feelings of the great body of the profession in Ohio, and that if the action of the Association was right, we had no doubt but that the State Society at its ensuing session would rescind. Such has been the case. The State Society, at its late session, by an almost unanimous vote, has done itself the credit to again step up on the National Platform, and we are again in *statu quo*.

Clinical Lectures on Pulmonary Consumption. By THEOPHILUS THOMPSON, M. D., F. R. S., Fellow of the Royal College of Physicians, London; Physician to the Hospital for Consumption and Diseases of the Chest. Philadelphia: Lindsay & Blakiston. 1854. For sale by Riley & Co., Columbus.

Consumption is certainly one of the most important diseases which can occupy the attention of medical men. The single fact that in England, nearly one sixth of the entire mortality is attributed to this vicegerent of death, and that in the Eastern portion of our own country, it occupies an equally conspicuous place in the lists of mortality, will be sufficient to arrest our attention and lead us to bestow more than a passing glance at any book which increases our information on such a subject. By this we would not wish it to be understood that we intend any elaborate inquiry into the nature of the "materies morbi," to discuss the history and pathology of tubercle, but rather to dwell upon the more practical points which it is useful for every practitioner to be informed upon, viz: the first symptoms, which can be recognized—any circumstances which modify its course and influence its duration.

We may properly premise that our author has enjoyed more than usual advantages for the investigation of Thoracic diseases, from his position as Physician to the Hospital for Consumption at Brompton, near London. That he has availed himself of them to the fullest extent, none will doubt who read his book.

What do we really know about Consumption? Have we really made any progress in our knowledge of its real nature, or do we only more effectually conceal our ignorance under a guise of learning, than did our forefathers. Is our confession of ignorance so ingeniously made, garnished with so many technical quips an quirks, that it passes with the good natured, credulous world, as a creed and explanation,—repeated in many cases so often until we accept it as a solution ourselves? We are afraid it is too much so, and that we silence our questioners more with hard words than solid reasons. Is this statement too sweeping? Let any one seek the definition of Phthisis in the books of the best authors of the past five years—compare the statements of Ancell, Williams, Gulliver, Henle, Reinhardt and Virchow, as to the production and nature of Tubercle, each differing from the other, and answer for himself. Then let the inquirer if he will, turn to Sydenham, Morton and others of the

older writers, who, without pathological science at their command, used sharp eyes and possessed powers of shrewd observation; or, even farther back to the times of Hippocrates, Cælius, Aurelianus, and Ætius, and the comparison will not furnish him with so much cause of gratulation at our advancement as he might expect! Yet though we may glean no answer to the inquiry of "What is Phthisis," to which grave objections may not be urged fatal to its accuracy, as a scientific definition, we may at any rate gain somewhat to assist us in the investigation, and of great importance in a practical point of view—viz: that the local lesion, the deposit and developement of tubercle in the lung or elsewhere, is not the sole disease, but that antecedent to these local disturbances is an abnormal state of the system essential to their production. The exact nature of this abnormal condition we know but little of, and the disease is scarcely recognized in the generality of cases, until it has produced a palpable result—the deposition of tubercles and their natural sequences. Unfortunately, it is this latter stage of tuberculosis, which has too often occupied the exclusive attention of authors, so that while the signs, by which the course and history of pulmonary consumption may be traced, are as well and as generally known, as those of any other disease, it is equally true, that hardly a disease exists, of which so little is with certainty understood in regard to its accession and incubation. Nevertheless, in this stage only is success to be expected in treatment, in the great majority of cases. To hesitate until what are everywhere understood as the evidences of "Phthisis" reveal themselves, is to lose the golden opportunity, and thenceforth the treatment becomes merely paliative. How important then is the question *what are the first signs of Consumption?* We omit those general considerations that excite our watchfulness in certain individuals, such as hereditary tendencies, occupation, &c.

Remembering how much light physical exploration has thrown upon thoracic diseases, we shall doubtless seek its assistance, and inquire, what has it revealed concerning this matter? It has enabled us to distinguish the various thoracic diseases from each other and with respect to Phthisis it has cast a perfect flood of light that enables us to track with absolute certainty the downward progress of of the tuberculous. But to detect the first signs of departure from health, it either has failed, or what it has contributed to that end, is too much overlooked and undervalued. This is partly due to the

fact that we expected too much at first from this source, still more, we think to certain circumstances connected with the history of Percussion and Auscultation, too seldom recognized. It may very properly be asked, whether as a rule with those authors who have directed attention to the exploration of the chest, the tendency has not been to refine and divide the phenomena into too great a variety of sounds, above all, to add names which do not represent the sounds heard by one to another man's understanding, rather than to simplify and collect the various different sounds according to their significance and value. We do not undervalue physical exploration; far from it, for we believe nothing has tended so much to give an impetus to rational medicine, as the discovery of Laennec and the careful observations of his followers, but the tendency of specialism is to ultraism, to overstate the value of minutiæ, until to an inexperienced reader they all appear to have equal importance. This disadvantage ensues, that not rocognizing the less pronounced sounds, he becomes discouraged. He forgets, (or perhaps the stress placed upon these refined points, has misled him) that for diagnostic purposes, there are certain leading features to be seized, to which the others are but subsidiary. Let him study to acquire a good knowledge of those, and these will almost insensibly follow. The precise limit of a cavity need not be marked out, but to detect its existence within a lung, whatever its size, is of essential moment. The more expert explorer may compass the former task and triumphantly vindicate his skill, at the ensuing autopsy, but he has not, by such topographic accuracy, added one essential item to influence the diagnosis or treatment of his patient. So the determination of the precise character of a "ronchus" or "rale," which may be heard, is of secondary importance to the solution of the two easier questions: "Is the sound abnormal?" and "Where is it heard?" Every educated practitioner should be able to solve these, whereas the former may often reasonably be beyond his skill, or even of the more accomplished auscultator. Thus, abnormal sounds at the upper part of the chest, in one or both lungs, whatever their character, even if other diseases—pneumonia for instance—be present, should always excite anxiety, lest masked by these, the more formidable Phthisis be also present, and in such cases, long after apparent convalescence from those diseases ensues, it is proper because it is a safe precaution to be on the look out for any evidence of its approach. All this may seem trivial, but we have met with several men, who have

thought auscultation and percussion obscure, because they overlooked these very considerations, and of course they undervalued its teachings. We were glad, therefore, to find that so eminent an auscultator as Dr. Thompson, has called attention to the bewildering phraseology which has enveloped this subject, and we earnestly recommend the perusal of his introductory chapter to the student of auscultation, and even to the adept. Returning from this digression we resume our consideration of the early signs of Consumption.

Early in Phthisis, perhaps among its very first signs, we find a *prolongation* of the expiratory movement, increasing as the disease advances, "until instead of occupying as in the natural state, a fourth part of the period of healthy inspiration, it may even come to exceed in duration, the inspiratory murmur." The same symptom is also found in emphysema, but with the rational symptoms so different that few would be led astray. Besides, in the latter case, the resonance of the chest on percussion, is increased while in Phthisis, it is either natural or somewhat duller. Respecting the value of this symptom Dr. Thompson remarks:

"Among 2000 consumptive patients, it proved to be the most remarkable of the physical signs in 288—those cases presenting bronchial complications being excluded. Hæmoptysis had occurred in 91 of these cases, that is in 31 per cent.,—a proportion calculated to confirm my opinion of the significancy of the prolonged murmur, and at the same time sufficiently below the average frequency of Hæmoptysis, in the first stage of Phthisis, to support the assumption that the prolonged expiratory murmur takes precedence of other characteristic signs, which are commonly assumed as requisite in in order to prove the existence of consumptive disease." p. 147.

"Prolonged expiratory murmur slight in degree, if heard only on the right side is inconclusive, but if confined to the left, is far more significant. The more limited the space over which it is heard, the greater the probability that Phthisis is the cause. The persistency of the sign for a considerable period, if unattended with symptoms of bronchitis, emphysema or pneumonia, indicates some permanent obstacle to the free exit of the air, and in a majority of instances this obstruction is of a tubercular character. In cases depending on pulmonary congestion, the expiration, after cupping and other appropriate treatment, usually resumes its natural character; but excluding this and other complications before noticed, I have not recorded any instance in which this sign, once fully established, ever ceased to be obvious, unless superseded by other signs."—p. 148.

He also says that in many instances this symptom preceded cough. Another interesting but less valuable auscultatory sign which occurs early in consumption is a modification of the inspiratory sound called

by Laennec *l'inspiration entrecoupee*, and by some writers "jerking inspiration," which gives too great an idea of suddenness in the performance of inspiration to be accurate. Our author prefers 'wavy inspiration,' as the sound resembles the advancement of successive waves upon the shore.

We have already alluded to the importance to be attached to any abnormal sound heard in the upper part of the chest as cause for suspicion of ulterior evil. We cannot enter into the physical signs of confirmed Phthisis, but pass at once to the evidences gained from the state of the vascular system.

The aid of the microscope has been sought to see if any difference exist between the blood of tuberculous and healthy persons, so that by pursuing the inquiry to gain some evidence in this way of general tuberculosis, before it has become localized. Our author thinks something may be learned by observing the length of time the blood corpuscles consume in their morphological changes from round discs to stellated and corrugated bodies, and that this process takes place with much greater rapidity in phthisical than in other persons. Repeated and numerous observations alone can confirm this suggestion; till then this result must be received with due caution.

More within the range of ordinary observation is the appearance of the gums, where frequently "a mark at the reflected edge of the gums, usually deeper in color than the adjoining surface, and producing a festooned appearance by the accuracy with which it corresponds with the curve of the gingival border; this mark is in some patients a mere streak, in others a margin sometimes more than a line in breadth. In the most decided cases this margin is of a vermillion tint, inclining to lake."—p. 171.

It is most distinctly marked as a general rule around the incisor teeth, but frequently it is apparent around the molars. Its obvious direction is somewhat influenced by the shape of the mouth. Among 21 consumptive *men*, the tinted line was evident in 20;—in both jaws in 16;—of the rest in the upper jaw alone in two,—and in the same number upon the lower jaw. In one patient thus examined it was absent. In 21 phthisical *women*, there were 8 without margin, yet having signs of advanced phthisis; 11 had both jaws marked, and in the remaining 2 the lower jaw alone was marked. Of both classes, 7 males and 7 females were only in the first stage—6 males in the second—8 males and 14 females in the third. Its early appearance

is afterwards alluded to. Dr. Thompson thinks that its absence in cases of otherwise well pronounced phthisis, may be regarded as a favorable indication as to the susceptibility of improvement, and the presumed duration of the disease. A comparison of the occurrence of this symptom and that of clubbed fingers is derived from tables of 38 men examined—of these 23 had their fingers more or less clubbed, and all in whom this was obvious had the margin—10 had the margin but not clubbed fingers. In the same number of women 22 had clubbed fingers, of which 21 had the margin and in one it was absent—in 10 the margin existed without the clubbed fingers. When once established, Dr. Thompson thinks it is permanent. We cannot enter into an explanation of this phenomenon; to such as feel interested in it we must refer to the book itself. Dr. Thompson concludes from his own experience—

"1st. That the absence of the streak in men affected with inconclusive symptoms of consumption may incline you to a favorable interpretation of any such suspicious looking indications—but that in women rather less weight is to be attributed to this negative sign.

"2d. That the presence of the sign in women is almost conclusive evidence of the existence of the tubercular element in the blood.

"3d. When in either sex it coincides with a pulse not materially altered in frequency by change from the sitting to the standing posture, the presence of phthisis may with high probability be assumed, even before having recourse to auscultation."—p. 184.

We need only add that the observation is very readily made and the symptom easily recognized by a careful observer.

Increased frequency of pulse is present, even in very early periods of phthisis, in the same ratio which in other diseases co-exists with circumstances disqualifying the individual from exertion. Of course the degree of acceleration is relative, according to the healthy rate of each person affected. Among 20 patients in which the stage of softening was reached, only one had a pulse below 90. The pulse of consumption differs in other respects from that in health. The natural pulse is found by Drs. Knox and Guy to be slightly lessened in the number of its beats towards evening. If the pulse of a man in health be felt while he stands, it will be found that the number of beats exceeds by 13–18 the amount of the same when the individual sits on a chair with his back supported, and in cases of debility the difference thus caused is still greater. In phthisis, on the contrary, the pulse is accelerated towards night, and the difference induced by change of posture very much less even in

the morning than in health, and still less in the evening, when the degree of fatigue from the daily wear, would naturally have a reverse effect. In some consumptive persons no difference at all is produced by change of attitude. One other disease presents a striking analogy to consumption in this respect, viz: Hypertrophy of the heart. Change of position has but little influence on the pulse in that disease. The late Dr. Clendinning determined from his investigations that the heart was, proportionably to the whole body, greater in Phthisis than in other diseases, and Dr. Thompson enters into a calculation of 32 hearts of those who died of phthisis, where the result agreed with that conclusion, notwithstanding the extreme emaciation of body present in all the cases. These are subjects worthy of more extended observations.

Dr. Thompson gives a tabular statement of the reduction of "vital capacity" found in consumptive persons. This is determined by an instrument kept in hospitals, called the 'spirometer,' by which the capacity of the lungs for air is measured. This is beyond the reach of most of us.

Not so, however, the falling off in weight, which is often the first distinct symptom (excepting perhaps a cough) which attracts the patient's own attention to his declining health. To estimate this truly, it is necessary first to have an average healthy standard. Dr. Hutchinson, quoted by Dr. Thompson, gives the following results from an immense number of observations. According to him, persons 5 feet high should weigh ..... 120 lbs.

5 feet 4 inches,	"	.....	140 "
5 feet 8 inches,	"	.....	160 "
6 feet,	"	.....	180 "

And so on, 5 lbs. for every extra inch. We cannot help thinking this is too high an average to be applied to this country, although doubtless correct as applied to the English. We have not made as extended observations as we could wish, but from those we have been enabled to make, we are satisfied that the average should be reduced from 10 to 15 lbs. below this.

The occurrence and character of the cough and expectoration are also alluded to at length, and the cycle of changes which the latter passes through minutely described. Dr. Thompson does not allude to the disorders of the digestive functions, and the liver and the thoracic pains pointed out by Dr. Bourbon* in the Archives de Med-

* American Medical Monthly, volume 1, page 66.

icine for April, 1853, as occurring so often in the inception of Phthisis, an omission we much regret.

Such are most of the earliest symptoms of Consumption, easy to be detected, but most important in their character. The persistence of any one of them may reasonably excite attention, while the presence of several will always cause the deepest apprehension for the future.

On one other point we must follow our author—what influence have certain symptoms often attendant upon Phthisis, upon its duration? These are especially Hæmoptysis and Fistula in ano. As to the former, Dr. Thompson thinks that when moderate in amount it must be regarded as rather beneficial than the reverse, and his general experience leads him to believe that its occurrence tends more to retard than to accelerate a fatal issue. In Dr. Thompson's table a period generally of from a year to fifteen months, in some cases even extending to two years previous, is noted, at which period hæmoptysis appeared. Dr. Walsh, in his report as to the Hospital for Consumption, made in 1849, records that the average duration of the disease in 125 cases in those who had Hæmoptysis was 26.15 months, while in the same number who did not suffer from it, only 16.48 months. It is rarely directly fatal, but its diagnostic value is extreme.

Fistula in ano is also thought to exercise a favorable influence on the duration of the disease.

And here the length to which this notice has attained, admonishes us to stop; although there are many other points connected with this important subject which we would like to discuss.

For all other topics connected with Consumption we must refer our readers to the book itself, which he will find to be written in an earnest and simple style, remarkably free from indefinite phrases or technical conventionalities. R. G.

A Practical Treatise on the Diseases peculiar to Women, illustrated by cases derived from Hospital and Private Practice. By SAMUEL ASHWELL, M. D., late Obstetric Physician and Lecturer to Guy's Hospital. Third American, from the Third and Revised London Edition. Philadelphia: BLANCHARD & LEA. 1855. pp. 528. For sale by J. H. Riley & Co., Columbus.

When a work has gone through two editions and received the impress of a third, it has passed beyond the bar of the reviewer. It neither fears his frowns nor needs his praises, for it has secured a

higher prize in the approbation of that portion of the reading public for which it was designed. Respecting the merits of Dr. Ashwell's book, it would be superfluous therefore in us to speak. Most practitioners who have had to treat diseases incident to females, possess this work, and have been indebted at some time of their lives to the judicious advice and faithful descriptions of diseases with which it abounds.

On one or two points only must we remark. It is no disparagement to say that Dr. Ashwell is rather disposed to be cautious in recognizing "new things." He demurs to the frequency of inflammation and ulceration of the cervix uteri, as stated by Dr. Bennet, Simpson and others, and is unconvinced as to the supposed frequency of the various displacements of the Uterus, although founded upon the observations of Simpson, Protheroe Smith, Hensley, Kiwisch and many others, and as to the Uterine Sound of the former gentleman, he hazards the severe remark that it "not only detects but makes many of the supposed displacements." We cannot avoid thinking that prepossession has something to do with this conclusion in the worthy Dr.'s mind. All who have used this instrument with care must acknowledge its assistance in rendering clear a diagnosis which without it would be obscure, and its recognition long delayed, the sufferings of the patients being meanwhile prolonged. Neither should the use of such words as "spiking an organ" deter any from the use of the sound or the intra-uterine pessaries suggested by Drs. Simpson and Kiwisch in cases which clearly demand them, and in which the reposition of the displaced organ cannot be accomplished by other means. True, evils may be apprehended from their incautious use, but if we are to discard every means in which there is a bare possibility of failure or danger from our list of therapeutic appli- agents, farewell to all improvement, and all proper use of remedial ances. The possibility of the occurrence of evil must make us add to our caution, but not lead us blindly to throw away all such aid. The testimony of men like Simpson, Protheroe Smith, Kiwisch, Miller, and a host of others, "good men and true," as to their safety and utility in a large majority of cases, is sufficient authority for their careful use. Certainly they should never be employed otherwise. We have witnessed numerous cases where such agents have been required and applied, but have never chanced to see the ill effects spoken of by Dr. Ashwell.. Yet we do not deny their existence; only we insist they form the exception, not the rule.

Regarding one other particular, we wish to say a word, without knowing exactly if to Dr. Ashwell or to the American Editor (if any there be to this edition) we are to attribute the shortcomings we refer to. A work on Diseases of Females, with the date 1855 on the title page, which treats of Dropsy of the Ovary, and alludes to the operation of ovariotomy, should certainly predicate an opinion concerning the merits or demerits of that most serious operation upon the latest and fullest statistics upon the subject. Yet the list of operations performed embraces only 63, which is stated to "include the results of almost all the cases on record." The latest case in the number bears date in 1850! Dr. Bird is mentioned as operating twice, and Dr. Atlee once only, yet both these gentlemen have removed the diseased ovaries in a number of cases, and many times successfully. Other names familiar to any who have investigated the subject of "Ovariotomy" are also omitted. It may justly be a matter of congratulation, that while a leading and justly popular treatise on these subjects is thus wanting, the physicians of Ohio can easily supply the deficiency from the records of their own State Medical Society. In 1851, the committe of which Dr. Buckner was chairman, published a report on Ovarian diseases, including the results of 222 *cases of Ovariotomy, and an analysis of the same,* furnished by Dr. Atlee. Since this period the latter gentleman has published the results of 30 additional cases.

We have freely alluded to those points in which we think the work is not sufficiently brought down to the present times, because we think the great merits of the work, appreciated as well by us as by the profession at large, might possibly cause them (important as we fear they are) to be overlooked. The work of Dr. Ashwell will always maintain a high rank among the authorities upon diseases of the weaker sex. We call especial attention to the valuable article appended to this volume, "*on the morbid consequences of undue lactation,*" a comparatively new but very important matter of medical investigation.

R. G.

An Outline of Medical Chemistry for the use of Students. By B. Howard Rand, A. M., M. D., Professor of Chemistry in the Philadelphia College of Medicine, &c. Philadelphia, (for sale by Randall & Aston, Columbus,) 1855, pp. 259.

The title page of this little book very accurately designates its intention and character, and will meet the exingencies of that class of students (far too numerous we are afraid,) who depend for their information upon outlines, compounds, and such "short roads to knowledge." They will find herein as the author truly states, "such facts as are of the most importance, in such a form as to be of easy reference for service." Moreover, we have no doubt it will prove a very useful remembrancer to the advanced student in chemistry, who wishes to refresh his memory on any subject of which it treats, and to whom a glance at the leading topics, recalls the process and operations understood but not expressed in outline statements. The omission of Physiological Chemistry is by no means satisfactorily accounted for in a work purporting to treat of Medical Chemistry. While therefore we have no hesitation in recommending the book, with this exception, as a good one of its kind, we do not commit ourselves to the praise of the class to which it avowedly belongs.

R. G.

PART FOURTH.

EDITORIAL AND MISCELLANY.

Ohio State Medical Society.—We have not yet received an official copy of the Transactions of the State Society, for the present year. The annual session was held at Zanesville, on the 5th, 6th, and 7th ultimo.

The meeting, all things considered, was one of the most interesting that has ever taken place in our State. This remark does not apply in an especial manner, to the papers read, though some of these were highly creditable, and when published, will be found to

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The meeting, all things considered, was one of the most interesting that has ever taken place in our State. This remark does not apply in an especial manner, to the papers read, though some of these were highly creditable, and when published, will be found to

be of practical utility. But it applies to a disposition which has been growing up for some time among a certain class, to throw off all written ethical restraint, and be governed in future by the spontaneous sense of propriety that may be elicited by professional intercourse. This feeling found its expression at the late meeting, in a report made by M. B. Wright, M. D., who was chairman of a special committee on ethics.

Of the origin of this feeling, and the circumstances which have fostered it, we shall say nothing. But we shall take the liberty to say, that, in our humble judgment, there is not a reason in the annals of ratiocination that can be brought to support it. That our system of ethics is perfect, no one pretends to affirm; nor that objections cannot be urged against it. But, what is there of human origin, against which objections cannot be urged. They may be urged against a *plenum* or a *vacuum*—against every thing pertaining to Nature, Art, Society, or Religion. But what of all this? If innovators would put themselves to the trouble to take a few lessons from Blair, Duncan, Abercombie, or some other elementary writer on the subject of "*fallacies*," they would see the *fallacy* of rejecting things merely because objections may be urged against them. In order to understand the merits of his case rightly, the innovator should consider whether there are not more and weightier objections against the course he is pursuing and its effects, than there are against the things to which he is objecting. This test, in the case before us, as well as in many others, would have the effect of classifying what is generally regarded as argument, under the head of "*The Fallacies of Objections.*"

For our system of ethics, no one claims any more than that it is a digest of the rules, that it has been supposed would be useful in governing physicians in their intercourse with each other, and with their patients. The present form of the system, is the result of the labor, not of a single individual, or of a particular class of individuals, but of the good and great of the profession, from Hippocrates to the present time. Really, every man for twenty centuries, conspicuous as a practitioner, has contributed something to it, in action or words; and, whether it is perfect or not, has nothing to do with the necessity for its existence. It should be *improved* if deficient, not destroyed.

It was contended that the code of ethics has been inefficient in accomplishing the purposes for which it was instituted—that is, it

has not made every member of the profession honest and courteous; and because it has not, it ought to be erased from the records of the profession—strange logic this! Suppose we apply it to the codes legal and religious, that have obtained in our country. Are our Constitution and Laws to be abolished beeause they have failed to make all good citizens? Or must we lay aside the Holy Oracles because bad men are now almost as numerous as ever?

To many of us it seems that Law and Man were made together, and are inseparable. The latter has not been permitted to exist for a moment without the restraint of the former. The most stupid novice recognizes the presence and agency of law in every movement of the physical organization; and it has been supposed that it was the peculiarity of modern civilization, to possess a code expressly adapted to the moral and social part of our composition. How futile then to be finding fault with what is as indispensable to our existence, as cohesive force to inorganic matter.

But it is thought, medical men need no such regulation. Why not? Have not they a calling, intricate and peculiar in the relations it possesses, and demanding of each other, conduct shaped in accordance with the greatest possible degree of precision? It would indeed, be strange that in their intercourse with each other, their movements should be left to the spontaneous sense of propriety which happened to be on hand at the time. Without some standard their views of right would be about as various as the statues of their different persons.

It is to be hoped that future efforts will be directed in the work of building up, instead of tearing down. The latter kind of employment, or any thing that smacks of it, looks too much like playing into the hands of the enemies,—the irregulars of every hue and shade. They have been and are now formidable enough without being strengthened by our dissensions or harmonized by our quarrels. Every move a medical man makes, involving in any manner, the future standing of the profession, should be well considered. *Cui bono* should be the uppermost question.

The State Socicty, meets next year in this city, and we say in advance to our friends, come one, come all.

We are under obligations to our Medical friends at Zanesville, for the very warm reception with which we were there greeted. Every thing necessary to business, and the comfort and enjoyment of members was amply provided.

Notice to Members of the Ohio State Medical Society.—*Members* of the Ohio State Medical Society, it may be seen, from the Medical Counsellor, will soon be called upon by the Treasurer, Dr. Crume, for the annual assessment, one dollar, levied at the late meeting at Zanesville. It is important that each member respond promptly, otherwise there will be no Transactions published for the present year. Besides, a resolution was passed at the late meeting, cutting off from membership, those who are hereafter found delinquent.

Epidemics of Ohio.—Some two years since we were appointed by the State Medical Society, Chairman of a Committee on the Epidemics of the State, with the liberty to choose such other members as we might think advisable. We have made no appointments, nor do we intend to make any. But we wish every member of the profession in the State, who has, or who may have, between now and the first of April next, any information on the subject, to regard himself as one of the committee, and communicate to us the result of his observations. We expect to make the report at the next meeting of the Society, to be held in this city, June, 1856.

We consider it unnecessary to indicate the points to which attention should be directed. Every one, of course, must be his own judge as to the method of making and detailing his observations. What we want is a thorough statement of the facts.

Address, JNO. DAWSON,
Columbus, Ohio.

Notice to Subscribers.—The present No. closes the 7th volume of the Ohio Medical and Surgical Journal, and we take the opportunity to call the attention of those *in arrears*, to the propriety of at once liquidating their accounts. Quite a number are in arrears yet for the present volume, (although our terms are in advance,) some for the present and preceding, and there are others who have received the work since its commencement, and until the present have paid nothing. Such delinquencies work injurious results in every way in which they can be contemplated. By them both parties, creditor and debtor, are made worse. While remitting for back dues, the occasion may be embraced to send the subscription for the 8th volume, which commences with the next number.

Signs of the Times, No. 2.—In a previous number of the Journal, we indulged in some reflections touching the caption at the head of this paragraph, and we propose now to extend our thoughts a little further in the same direction.

Time has been when a few individuals located at favorable points on our Continent, engrossed almost the whole of public attention as Teachers of Medical Science. They embraced the favorable opportunity while our community was in the plastic state, so far as things medical was concerned, to impress themselves in a way that inspired towards them the most unlimited confidence and veneration. Eminently worthy, their influence was complete and commanding. The Fohi of the Chinese, the Brama of the Hindoos, the Jupiter of the Greeks and Romans, or the Woden of the Scandinavians, scarcely held greater dominion over the minds of their respective communities, than did Rush, Physic, Dewces, Wistar ,etc., over the medical mind of our nation. In every sense of the word oracles, what they uttered was implicitly believed, what they commanded was faithfully obeyed. Taken altogether, they were a constellation that imparted life and light, not merely to the Atlantic slope, but to the length and breadth of the Basin of the Mississippi. Such gifts, however, to humanity, cannot continue forever! By an edict that embraced the brightest genius with the ephemeral insect of the rose leaf, they have passed away, and we now feel very fully the force of the maxim: *Tempora mutantur et nos mutamur in illis*—times change and we change with them. With new times we have new men, all differing very widely from what obtained in the period to which we have alluded. In our day, among other things, we find a greater admixture in the community, of doubt, skepticism and sophistical reasoning. One tenth part, and in some instances more, of many communities have reeled from the perpendicular of common sense and science, and slid off into the dominion of systems founded on fancy, ignorance, avarice, and fraud. With such circumstances we have also some difference in the intellectual stock of those that now occupy the place of the former savans. This does not concern the amount so much perhaps, as the kind, quality, etc. Many departments hitherto but little, if at all cultivated, now rank as of primary importance, while accuracy in every thing has very much increased. There is another point of comparison between the two classes that cannot have escaped notice. We allude to the relative standing of each before the medi-

cal community. As already remarked, those of a former day possessed not only unlimited confidence, but were almost deified, while those who occupy their places are regarded merely as a part of the great body of teachers spread over the territory of almost a score of States, that extend from Maine to Louisiana. At all these various points, the native soil has seemed to be prolific in the material for making Teachers, and as a consequence the growth, although in many instances rapid, has been sufficiently tall and commanding not only to excite admiration, but to invite under its shade, a very large proportion of those who wish to do service at the feet of Æsculapius. To drop the figure, we do not intend to assert that all the colleges which have sprung up are demanded by the wants of the times; or that this, that, or the other one must ultimately be the great "medical centre" of the continent. Nor do we intend to suggest that those engaged in teaching in this, that, or the other school must necessarily take precedence. Such suggestions we have always regarded as invidious, unnecessary. At the same time no one should try to ignore the fact that the spell in regard to the sufficiency of eastern men and eastern schools has been broken, or rather that it has spontaneously evaporated. As the States North, South, and West have been developed, the propriety of providing for medical education, has shared largely of public attention, as being among the requirements indispensable to well organized communities. Colleges have been reared, facilities provided, and Faculties organized. These institutions in the past have been patronized, in the future this must increase, and the time is not far distant when the larger States will regard it as being as incumbent upon them to provide the necessary means for a medical, as for a literary education.

The States in the Mississippi Valley differ from those on the Atlantic slope, in geography, geology, topography, hydrology, mineralogy, and many other circumstances connected with etiology; and and as a consequence with the application of drugs to the cure of disease. While many of the elementary principles of a Medical Education, would be the same whether taught in France or Italy, no one wonld expect to learn in the former country, as well as he could in the latter, the best methods of treating the diseases of the Pontine Marshes.

Nor can any more be expected from educating young men in the Eastern Colleges who are designed for the practice of their profes-

sion in many of the Western and Southern States. What do those engaged in teaching in New York or Philadelphia know of "sinking chills," yellow fever, or the lesions that result from the union of malaria with cholera? What do they know also of the great variety of other ailments inseparably connected with the overflowing of our great rivers; and the deep beds of loam that so universally abounds in the Interior Valley, ever varying in its chemical composition and consequently in its influence upon the community? To all such questions the answers would be—they know but little, except what they have learned from books and periodicals, written by those living in the regiǒns. An individual that has been engaged in expounding practical medicine for thirty years in Eastern schools, informed me, a few months since, that he had never crossed the Allegheny Mountains. The knowledge then of such individuals, in regard to the great staple diseases, endemics and epidemics of our country, being of a second hand character, any effort that it is possible for them to make, to communicate correct information must fall very far short of what might be done in this way by those living here, and having had the benefit of ample personal experience.

Facts accordingly transpire, that lend still more importance to the views expressed. From New England it has been and still is the practice of physicians educated among the granite hills, to immigrate to Western and Southern States, in order to practice their profession. All such will bear their testimony to their imperfect efforts at first, to understand and treat the diseases and forms of disease peculiar to their new location. Cartwright, the talented Southerner, although for a long time a very able practitioner in one of the cities near the delta of the Mississippi, felt it to be a duty that he owed to humanity, on removing to New Orleans, to go into one of her hospitals, and spend a year in investigating the character of the diseases peculiar to the locality, before offering himself as a candidate for city patronage. Now those educated in the East, on coming West and South, will find it to their advantage to adopt something of a similar course, otherwise they may find themselves in the condition, after practising a while, of Delpech, who said that he had spoiled a hat full of eyes before he learned to operate on the eye for cataract.

Receipts for the Journal.—The following are the receipts for the Journal not otherwise acknowledged :

Of Wm. Hooper, $2; J. D. Airey, $2; Wm. M. Landon, $2; L. Woodruff, $2; G. Eells, $3; M. L. Wyeth, $2; Isaac Huestis, $2; Leman Galphin, $2; S. S. Scoville, $2; C. A. Tremble, $2; J. H. Braine, $3; M. Tompkins, $4; J. W. Cameron, $2; — Dalford, $2; A. C. Moore, $4; J. G. Detzler, $2; Geo. Cook, $1; Thomas W. Bradley, $2; J. & T. Foster, $2; Wm. Judkins, $3; S. Parker $2; A. D. Wetherell; $2; J. W. Scott, $2; Joseph Rogers, $5; J. T. Heldreth, $1; E. Ranger, $2; A. J. Beach, $2; J. W. Hurst, $2; N. Green, $2; L. S. Ginhart, $2; P. M. Crume, $1; H. Culbertson, $2; Wm. Bell, $2; J. Campbell, $2; W. H. Reeves, $3; Wm. H. Jameson, $4; J. W. Watt, $2; J. A. Carothers, $6; C. F. Gibbs, $2; J. H. Corwine, $2; L. Holland, $3; M. A. Chapman, $2; J. M. Snodgrass, $2.

We had reviewed at some length that very interesting work, Hayward's Surgical Reports, and Brynes' Essay on the Contagiousness of Cholera, for this number of the Journal. They are unfortunately crowded out by the press of other matter, and must therefore be deferred until our next issue.

We have received several pamphlets from the authors, but can only acknowledge their receipt at present, and shall take an early occasion to notice them more fully:

Pustule Maligne, an Inaugural Essay by Daniel W. Wainwright, M. D. New York: Billen & Brothers. 1855.

Lectures on Ulceration of Os Uteri, in reply to Dr. West's Croonian Lectures, by Henry Miller, M. D. Louisville: Brennan. 1855.

Cases of Wounds of the Heart, by Dr. Purple. New York.

Polypi of the Womb, by Dr. Channing. Boston: Clapp. 1855.

We have received a beautifully lithographed portrait of Mr. Fergusson, of King's College, London, the celebrated surgeon. Those who have seen Mr. Fergusson with his cheerful face in the operating theatre, waiting to perform one of the larger operations for which he is so celebrated, while the patient perhaps is being anæsthetized,

and looking the least concerned man in the crowded room, will recognize the expression of his countenance, which the artist has faithfully transferred to the portrait before us. Those desirous of possessing the lineaments of this celebrated Surgeon and Surgical writer can obtain them from Otto Knirsch, New York.

We have also received with the June No. of the Buffalo Medical Journal, an admirable likeness in lithograph of Dr. Austin Flint, who has just retired from the editorial chair of that Journal. We understand the engraving to have been made and presented as a token of esteem from the physicians of Buffalo. Such transactions are creditable alike to him whose talents and energy have won such a recognition from his colleagues, and to those who have shown themselves magnanimous enough to recognize and extend a reputation acquired in their midst. The portrait is sent to all the subscribers of the present volume of that Journal. R. G.

OBITUARY.

We regret to announce the death of our young and esteemed friend, Dr. Apperson, of Bloomfield, Illinois, on the 13th of April last, of a congestive chill, after an illness of only twenty-four hours. The last time Dr. Apperson's name appeared in the pages of this Journal, it was among the graduates of Starling Medical College, in March last, and remembering the talents and assiduity he displayed as a pupil, we had hoped that long years of usefulness and honor were before him in the arduous though glorious profession upon which he had but just entered. Comparatively but a few days have since elapsed, and the destroyer claimed him. Such is life—in its midst—at its very outset—we are in death.

The British and Foreign Medico Chirurgical Review has been transferred to the editorial care of Dr. Sieveking, well known in this country as one of the authors of a new work on "Pathological Anatomy." Dr. Parkes, the former editor, has been appointed Superintendent of the English Civil Hospital in the East.

The New Orleans Medical and Surgical Journal will be edited by Dr. Bennet Dowler, of New Orleans, the distinguished Physiologist.

Western Lancet.—Dr. Lawson has retired from this Journal, and is succeeded by Dr. Thos. Wood, assisted by several medical gentlemen of Cincinnati.

The Buffalo Medical Journal passes from the editorial care of Drs. Flint & Hunt, to the sole charge of Dr. Hunt.

Dr. H. H. Smith succeeds Dr. Gibson as Professor of Surgery in the University of Pennsylvania. Dr. Smith was elected by a vote of 11 Trustees, to 9 in favor of Dr. Brainerd, of Chicago, one vote having been cast blank. Considering that Dr. Brainerd lives so far from Philadelphia, in the non-classic "West," this vote must be highly gratifying to him, as a recognition of his extended reputation. The New Jersey Medical Reporter asserts that Dr. Brainerd was the choice of a majority of the Faculty.

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Erratum.—The following error unfortunately crept into Dr. Wormly's valuable article in this No., notwithstanding the greatest care on the part of all concerned: On page 462—12th line from the bottom—for 134 : : .369 : .688, read 134 : : .359 : .668.

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Western Lancet.—Dr. Lawson has retired from this Journal, and is succeeded by Dr. Thos. Wood, assisted by several medical gentlemen of Cincinnati.

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UNIVERSITY OF PENNSYLVANIA--MEDICAL DEPARTMENT.

NINETEENTH SESSION (1855-6.)

THE LECTURES WILL COMMENCE ON MONDAY, OCTOBER 1, and terminate the middle of March ensuing.

Theory and Practice of Medicine,	By George B. Wood, M. D,
Anatomy,	" Joseph Leidy, M. D.
Materia Medica and Pharmacy,	" Joseph Carson, M. D.
Chemistry,	" Robert E. Rogers, M. D.
Surgery,	" Henry H. Smith, M. D.
Obstetrics and the Diseases of Women and Children,	" Hugh L. Hodge, M. D.
Institutes of Medicine,	" Samuel Jackson, M. D.

Clinical Instruction will be given at the Pennsylvania Hospital and Philadelphia Hospital.

Clinical Instruction in Medicine and in Surgery by the Professors of the Medical Faculty.

The course of Dissection will be conducted by the Professor of Anatomy, aided by Wm. Hunt, M. D. Demonstrator.

Amount of Fees for Lecture in the University,	$105
Matriculation Fee (paid once only),	5
Hospital Fee,	10
Practical Anatomy,	10
Graduating Fee,	30

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F. B. DICK, *Janitor University.*

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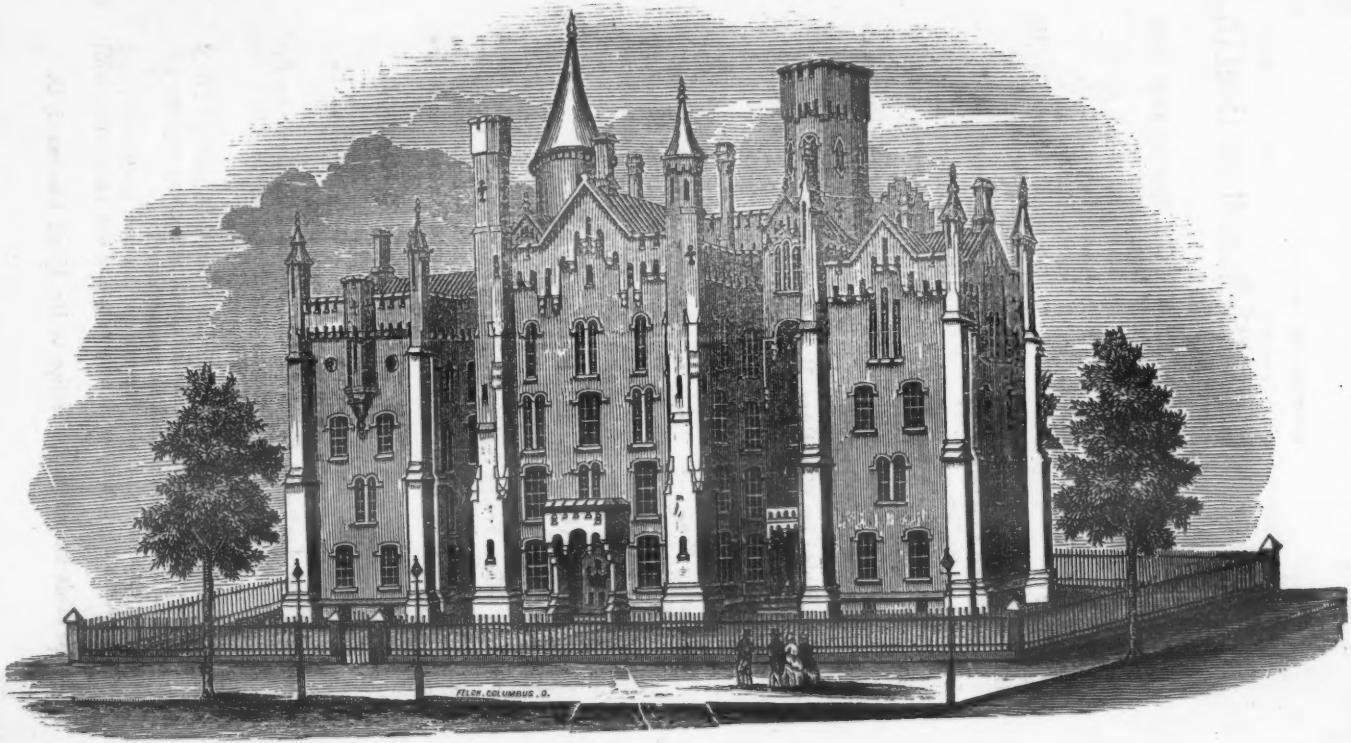
FILEY. COLUMBUS. O.

STARLING MEDICAL COLLEGE.

SESSION OF 1855-56.

THE REGULAR SESSION OF STARLING MEDICAL COLLEGE will begin on Wednesday, the 17th day of October, 1855, and continue for *five full months.*

FACULTY.

S. M. SMITH, M.D.,
Professor of Theory and Practice, and Dean.

FRANCIS CARTER, M.D.,
Professor of Obstetrics, and Diseases of Women and Children.

E. M. MOORE, M.D.,
Professor of Surgery.

JOHN DAWSON, M.D.,
Professor of General and Special Anatomy and Physiology.

J. W. HAMILTON, M.D.,
Prof. of Materia Medica, Therapeutics and Medical Jurisprudence.

THEO. G. WORMLEY, M.D.,
Professor of Chemistry.

S. LOVING, M.D.,
Demonstrator of Anatomy.

The Trustees and Faculty are happy in being able to announce the gratifying success that has attended their extension of the term to five months. It has enabled the faculty to give a more complete course in each department, and been more profitable and satisfactory to the student; and a larger number of our class remained till the close of the session than ever before.

The organization of the institution, as now effected, will, we are assured, secure for it a success not before attained. Its Professors are all residents; and fully identified in every way with its highest prosperity. Their present arrangements will enable them to add yearly to their means of illustration.

The faithful attention, flattering acquirements, and commendation of a class so intelligent as our last, is a guaranty that the efforts made for their instruction were fully appreciated. While every department was fully and clearly illustrated, the whole instruction was made yet more valuable by the clinics, the microscopic illustrations, and the extensive course on organic and analytical chemistry.

FEES.

Tickets of all the Professors, - - - - - -	$60 00
Matriculation Ticket, - - - - - - - - -	3 00
Graduation Fee, - - - - - - - - -	20 00
Ticket for the privileges of the Dissecting Room, including the services of the Demonstrator, - - - - -	5 00

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pense, on application to the Demonstrator of Anatomy, *and in no other way.*

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There are three extensive Bookstores in Columbus, at which Medical works in great variety are sold at very low rates. Surgical, Obstetrical and Dissecting instruments are readily obtained.

All letters of inquiry will receive prompt attention, if addressed to any member of the Faculty, or to S. M. SMITH, *Dean.*

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THIS INSTITUTION, FOUNDED BY THE LATE LYNE STARLING, Esq., for Infirmary purposes, is comfortably and neatly furnished for the medical and surgical treatment of persons afflicted with diseases of the *Eye* and *Ear.*

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All letters addressed to the undersigned, will receive prompt attention.

R. J. PATTERSON, M. D.,
Oculist.

STARLING HALL, Columbus, O, May 1, 1855.

TERMS—For board, washing, furnished apartments, fuel, lights, nursing, and treatment, the charges will range from $5 to $10 per week.

For Surgical operations, a separate charge will be made.

REFERENCES.

S. M. Smith, M. D.,	F. Carter, M. D.,
J. Dawson, M. D.,	T. G. Wormly, M. D.,
J. W. Hamilton, M. D.,	E. M. Moore, M. D.

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UNIVERSITY OF NEW YORK.

Medical Department.

SESSION OF 1855–56.

THE LECTURES WILL COMMENCE ON MONDAY, OCT. 15th, and be continued until 1st of March following. The session of 1854–55 was attended by a class of 307 students, on 106 of whom the degree of Doctor of Medicine was conferred.

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FACULTY OF MEDICINE.

Rev. Isaac Ferris, D.D., LL. D., *Chancellor of the University.*

Valentine Mott, M.D., LL.D., Emeritus Professor of Surgery and Surgical Anatomy, and Ex-President of the Faculty.

Martin Paine, M.D., LL.D., Professor of Materia Medica and Therapeutics.

Gunning S. Bedford, M.D., Professor of Obstetrics, the Diseases of Women and Children, and Clinical Midwifery.

John W. Draper, M.D., LL.D., Professor of Chemistry and Physiology.

Alfred C. Post, M.D., Professor of the Principles and Operations of Surgery, with Surgical and Pathological Anatomy.

William H. Van Buren, M.D., Professor of General and Descriptive Anatomy.

John T. Metcalfe, M.D., Professor of the Institutes and Practice of Medicine.

Charles E. Isaacs, M.D., Demonstrator of Anatomy.

George A. Peters, M.D., Prosector to the Professor of Surgery.

Alexander B. Mott, M.D., Prosector to the Emeritus Professor of Surgery.

John W. Draper, M.D., LL. D., President of the Faculty.

COURSE OF INSTRUCTION.

The course of Lectures given will be on Anatomy—general, descriptive, surgical and pathological; Principles and Operations of Surgery; Materia Medica and Therapeutics; Institutes and Practice of Medicine; Obstetrics, the Diseases of Women and Children, with Clinical Midwifery; Chemistry and Physiology; Clinical Surgery; Clinical Medicine; Clinical Lectures on the Diseases of the Genito Urinary Organs; Clinical Lectures on the Diseases of Women and Children; Clinical Lectures on Physical Diagnosis.

PRACTICAL ANATOMY.

The Legislature of New York having passed the Anatomical bill, the students will be furnished with ample facilities for the study of this department.

CLINICAL INSTRUCTION

will be given at the New York Hospital and Bellevue Hospital; and the various Dispensaries of the city, including the Eye and Ear Infirmary, in which there are yearly more than 80,000 patients, will be open to the students free of charge. In addition, there are held in the College Building, also free of charge to the students of the university, five Cliniques each week, as follows: 1. *An Obstetric Clinique for the diseases of women and children* on every Monday, from 2½ to 4½ o'clock P. M., by Prof. BEDFORD. Since the organization of this Clinique in October, 1849, there have been actually presented to the classes of the university between *eight and nine thousand* cases of the most interesting diseases incident to women and children.

2. *A Surgical Clinique* on every Tuesday, from 2½ to 4½ o'clock P. M., by Prof. MOTT. This clinique presents abundant opportunity for the study of surgical disease, and witnessing every variety of surgical operations.

3. *A Medical Clinique* every Wednesday, from 2½ to 3½ P. M., by Prof. METCALFE. Patients laboring under diseases of the lungs, heart, &c., are presented at this Clinique, and full opportunity is given to the students for the study of physical diagnosis, &c.

4. *Surgical Clinique, with the diseases of the Genito Urinary Organs*, every Wednesday, from 3½ to 4½ P. M., by Prof. VAN BUREN. Besides its general surgical advantages, this Clinique presents ample opportunities for the study of syphilitic disease, strictures, &c.

5. *Surgical Clinique* every Saturday, from 11 A. M. to 1 P. M., by Prof. POST. During the session just closed, besides various operations of importance, Prof. Post performed in this Clinique, before his class, Lithotrity fifteen times and Lithotomy once, with entire success.

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Letters may be addressed to Prof. DRAPER, President of the Faculty, University, New York.

NEW YORK, April , 1845.

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